

FLIGHT

The
AIRCRAFT
ENGINEER
&
AIRSHIPS

First Aero Weekly in the World.

Founder and Editor: STANLEY SPOONER

A Journal devoted to the Interests, Practice, and Progress of Aerial Locomotion and Transport

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DIARY OF FORTHCOMING EVENTS

Club Secretaries and others desirous of announcing the dates of important fixtures are invited to send particulars for inclusion in the following list:

1922.

- June 1 Entries close for Schneider Cup Race
 June 8 R.Ae.C. Whitsun Race Meeting, at Waddon
 June 23-25 International Competition for Touring Aeroplanes, Brussels
 July 29 Aerial Derby, starting at Waddon
 Aug. 6-20 French Gliding Competition
 Aug. 6 Gordon-Bennett Balloon Race, Geneva
 Aug. 7 R.Ae.C. Race Meeting, at Waddon
 Aug. (last fortnight) Schneider Cup Seaplane Race, at Naples
 Sept. Tyrrhenian Cup, Italy
 Sept. Italian Grand Prix
 Sept. or Oct. R.Ae.C. Race Meeting, at Waddon
 Sept. 22 Coupe Deutsche (300 kil.)

1923.

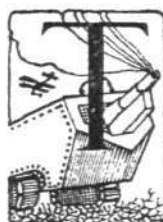
- Dec. 1 Entries Close for French Aero Engine Competition

1924.

- Mar. 1 French Aero Engine Competition.

INDEX FOR VOL. XIII.

The Index for Vol. XIII of FLIGHT (January to December, 1921) is now ready, and can be obtained from the Publishers, 36, Great Queen Street, Kingsway, W.C. 2. Price 1s. per copy. (1s. 1d. post free).

EDITORIAL COMMENT.

The
Russo-
German
War Pact.

THE very greatest interest attaches to the Russo-German Pact, which, it is alleged, actually provides for the supply of arms and ammunition for Bolshevik Russia by Germany. What purports to be the actual text of the secret military convention concluded in Berlin on April 3, 1922, between Russian and German representatives was published in the *Paris Eclair*, and a translation of it was published in the *Daily Mail* of May 19, 1922, the particular clauses referring to aircraft being given in this week's FLIGHT. That the authenticity of the document has been denied by both Berlin and Moscow need not necessarily mean anything, and it might have been thought that our own Foreign Office would be in a position to know whether or not the document is genuine. Up to the time of writing, no statement has, as far as we are aware, been made by the F.O., and it is, perhaps, permissible to assume that "there may be something in it." No smoke without fire may prove a truthful proverb once more, and at any rate the position is one which will bear the very closest watching.

The portion of the alleged treaty which interests us most is, naturally, that dealing with the supply by Germany of 500 Junkers all-metal aeroplanes. How Germany should have been able to construct under the eyes of the Inter-Allied Commission, 500 aeroplanes of any one type without being discovered, or how 500 such machines could have been hidden away and escaped detection, is a mystery. Although the reported text does not state when and how these machines are to be built, there is evidence that some of them at any rate are in existence. M. de Montjou, the French Deputy, states in a book which he has just published, dealing with his observations on a visit to Germany, that at the Junkers works at Dessau he found 74 machines in hand, nearing completion.

For whom were these intended? What was the explanation given to the Inter-Allied Commission, which must have known of their existence? Again we do not know. But one thing is certain, handicap Germany as we may by rules and regulations, we cannot prevent her from making arrangements for building her aeroplanes abroad. And it requires no great stretch of the imagination to see that even if the alleged text of the secret treaty is *not* genuine, the very fact of Germany having a treaty with Bolshevik Russia invites the construction of German machines across the border as the easiest and obvious way of circumventing the restrictions imposed by the Allies.

We may limit the power of the engines and the ceiling of machines and the fuel carried and the useful load which may be taken, but if, at the same time, we are unable to prevent Germany making arrangements for constructing aircraft and other war material abroad, to what purpose is it all? The situation is one fraught with danger to the Allies, and the future peace of the world.

♦ ♦ ♦

Our Neglected Seaplanes.

We have had occasion to refer frequently of late to the manner in which the development of the seaplane—and by the term we mean both the twin-float machine and the flying boat—has been neglected by this country, in spite of the fact that the sea has been for generations our home, and the parts of our far-flung Empire are separated, or connected, according to the way one looks at it, by leagues of ocean. By way of stimulating the interest in seaplanes, and of furnishing an illustration of what seaplanes can do, we published in our issue of last week an article dealing with the use which Canada is making of seaplanes. Elsewhere in this issue we publish a letter from a correspondent dealing with the question of Canada as a market for aircraft. As our correspondent is just returned from a visit to Canada, where he has been studying the conditions at close quarters, his opinions carry a good deal of weight, and we would recommend manufacturers to read carefully our correspondent's letter. His warning—that America, as a next-door neighbour, is likely to get ahead of us if we do not look sharp is, we think, very timely, and should be given every consideration.

It is not, however, in Canada only that there is a future for the seaplane. In fact, practically the whole of our Empire could show similar opportunities, and it is surely high time that the authorities took steps to ensure that the seaplane is given the amount of attention which it merits. In this connection it is worth remembering, and this is a fact which appears apt to be lost sight of, that the personnel of aeroplanes can be built up very much more quickly than can that for the seagoing type. The machines themselves take longer to develop, although once a type has been standardised a flying boat does not, probably, take very much longer to build than does a land machine. But the question of personnel is a vital one. Unless we start at once, there is a very grave danger that in the next war our lack of trained seagoing flying personnel may result in our defeat at sea.

While the Navy is doing a certain amount, it is limited by the allocation of machines and men, and it becomes necessary to look elsewhere if we are to have that reserve which will be an absolute necessity.

It would appear that, quite apart from the commercial possibilities of seaplanes, we shall have to run services whether they pay or not, simply to obtain experience in different parts of the globe, and in order to keep a reserve of trained personnel against emergencies. But—and that is the bright spot in all this present lack of seaplane development—there is every reason to suppose that seaplane services can be made to pay at least as well as aeroplane services, and probably better. They are not competing against railways running express trains at 60 m.p.h., but against steamers doing, at the outside, 20 m.p.h. Seaplanes do not require a large ground organisation, being able to utilise existing lighthouses, harbours, customs, etc. As they need not have a particularly good climb, nor a very high ceiling, the power can be used for carrying useful load. The insurance rates are, we believe, very much lower than those asked for land machines owing to the fact that the sea is an "aerodrome" always available. There is no question of having to find any particular aerodrome in a fog, and we are informed that it is a comparatively simple matter to alight on the sea in a fog, as there are, for practical purposes, no obstacles to worry about, only altitude.

We ought to see to it, and sooner or later we shall have to see to it whether we like it or not, that wherever there is a coaling station there should also be a seaplane base. Whether these should be purely naval, or whether they should be commercial as well, would be a matter for experts to decide. The salient fact to remember is that at present we are unprepared as regards seaplanes, and that it takes a number of years to train seaplane personnel, especially as such training will have to be done in practically all corners of the world, under all manner of different and difficult conditions. Is it not then high time that we commenced, even in a modest way, by establishing a seaplane service to be run regularly. Such a service would be extremely useful for the gathering of data and for the training of a nucleus of personnel upon which to draw later when we are able to expand the services.

♦ ♦ ♦

Fireproof Aircraft Tanks.

In this issue of FLIGHT we publish a brief description of the Silvertown tank which won first prize in the Air Ministry competition at Farnborough. The tank, it will be seen, consists of a welded sheet steel inner case, covered with a loose jacket of india-rubber. Although the tank is considerably heavier than the ordinary tank, weighing in the 30 gallons size approximately 1.9 lbs. per gallon capacity, its fire resisting qualities are such as to offer relative immunity from fire, one of the most terrifying of the dangers which threaten modern aircraft. It is true that in peace time the number of fires has been relatively small, but so long as petrol is used as a fuel the danger will be there to a smaller or larger extent, and any safeguard which will minimise the danger is deserving of the closest consideration. We strongly advise aircraft manufacturers to investigate the Silvertown tank, which is being marketed by the Palmer Tyre, Ltd., of Shaftesbury Avenue, who will be pleased to give further particulars.

■ ■ ■

Sir Hugh Trenchard's Promotion

It was announced in the *London Gazette* for May 23, that Air Marshal Sir Hugh M. Trenchard, K.C.B., D.S.O., Principal Air Aide-de-Camp to the King, has been promoted to the rank of Air Chief Marshal, as from April 1.

BRITISH AIRCRAFT IN FOREIGN MARKETS

Some Notes Dealing with the Aircraft Disposal Company and Its Methods

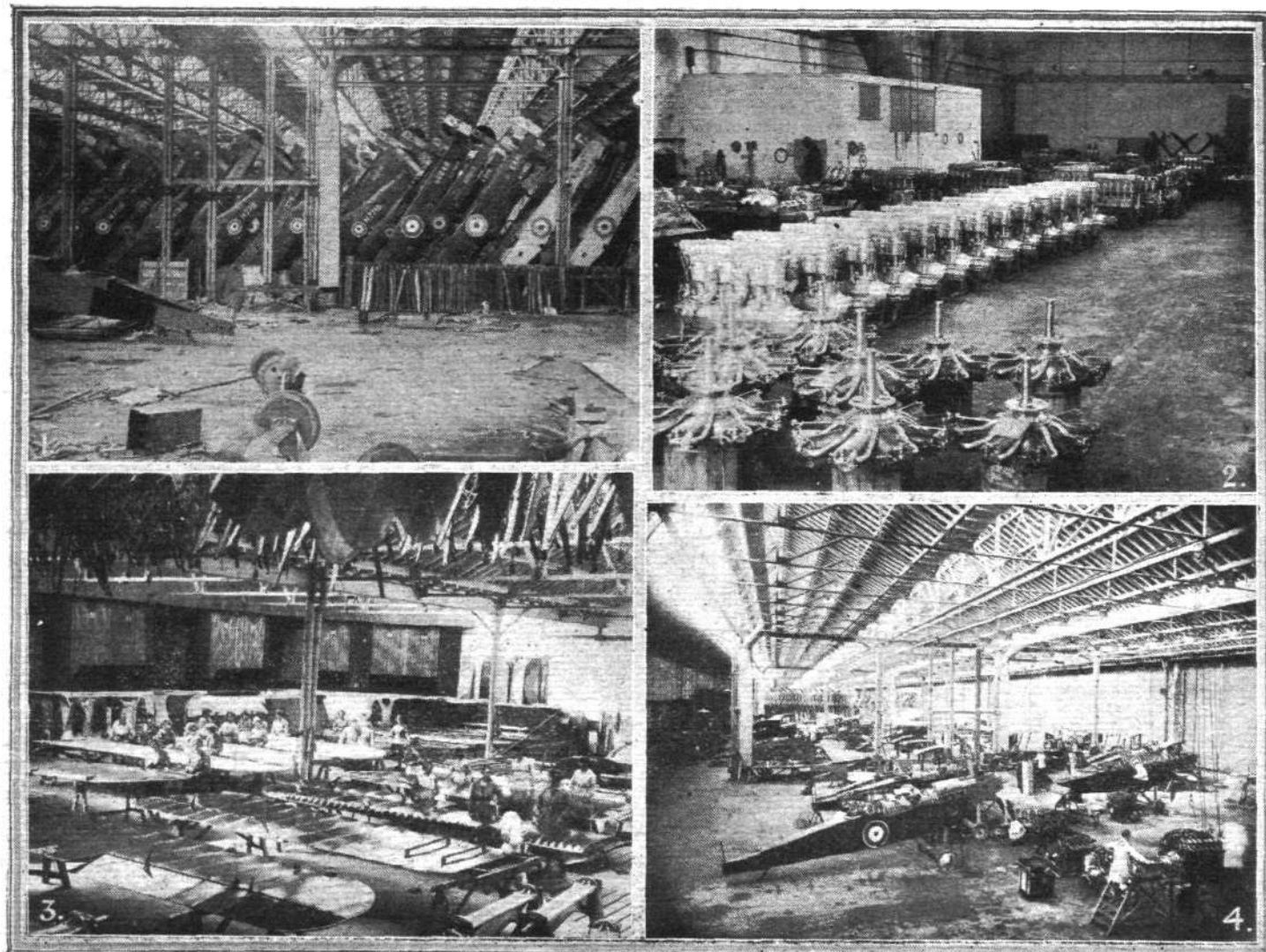
WHEN the War came to an end a question that was frequently asked was "What are we going to do with all our aircraft?" The question was one of very considerable importance to the British Aircraft Industry, as, naturally, the indiscriminate dumping of war machines might quickly ruin the whole aircraft industry as far as this country was concerned. It may be remembered that the Aircraft Disposal Co., Ltd., was formed early in 1920 to take over from the Government Aircraft Disposal Department all surplus aircraft, and having an agreement with the Government to hand over half of any profits that might be made out of the sale of the stock taken over. It will easily be understood that a very great deal depended upon the way in which the A.D.C. attacked the problem of reconditioning and selling their machines, and it must be frankly admitted that at one time certain misgivings were felt as to the effect which the new company would have on the prospects of sales by private firms to foreign Governments.

If machines were simply handed out to purchasers indiscriminately, at any price which they would bring, and left to stick together or drop to pieces as they thought fit, obviously British aircraft would be in grave danger of getting a bad name abroad, quite apart from the injury which might be done to individual designers for machines over which they had had no control, and whose condition they were in no way responsible for. Secondly, by selling at prices which were far below any that individual firms could possibly quote for new machines, it might be feared that the ground would be cut from under the private companies by the newly formed A.D.C., with equally disastrous results to the industry. The position was, therefore, a delicate one, to say the least of it, and it may not be without interest to examine briefly the

methods employed by the Aircraft Disposal Co. during the two years or so of its existence, and the effect on the industry in general.

All the difficulties outlined above, and many more to which we have not referred, were clearly realised by the Aircraft Disposal Co. from the first, and two years of successful business—successful as regards disposing of great numbers of surplus machines at a good profit, of which one-half returns to the Treasury and consequently to the taxpayer—have established the Aircraft Disposal Co. on a firm footing. This is chiefly due to the methods employed, which not only have given satisfaction to foreign customers, but which have protected the original designers by ensuring that no machine or engine is allowed to leave the A.D.C. establishment at Waddon until it is satisfactory in every way and up to A.I.D. standard. The consequence has been that British aircraft is now competing successfully abroad with machines—sometimes of much more recent date—made in other countries. And the harm done to the aircraft industry? Probably this has been quite small, if any harm has been done at all.

It should be remembered that, what with unfavourable rates of exchange and other handicaps of British commercial interest, there have been few Governments who, during the last two years, would have been able to afford to pay the prices which high wages, high cost of materials, etc., would have compelled manufacturers to charge for modern machines. On the other hand, there are now a number of Governments both in Europe and all over the world who have purchased A.D.C. machines, and who, knowing that these machines were not of recent design and consequently not of the highest performance now attainable, have been satisfied with them



THE AIRCRAFT DISPOSAL CO., WADDON: 1, Fuselages "stacked" in stores. 2, A row of Siddeley "Pumas" ready for shipment. 3, A corner of the doping shop. 4, Fuselages being re-conditioned.

for what they required at the moment. These Governments have naturally received a favourable opinion of British aircraft, and it appears natural to suppose that, when things right themselves once more and British manufacturers are able to compete, under normal rates of exchange, with other nations in the matter of price, these customers will return to this country for the latest types. We think, therefore, that, looked upon broadly, the existence of the Aircraft Disposal Co. has not been the cause of any direct harm to the industry, while its sale of machines all over the world has certainly been of very considerable value regarded as propaganda for British aircraft.

With these introductory remarks we may turn to the system adopted by the A.D.C. in order to ensure that machines are up to the required standard as regards soundness of parts, correctness of trueing-up, rigging, etc. To begin with, the A.D.C., on receiving an order from a foreign Government, always agree to having a representative of that Government always at their works while the machines in question are being re-conditioned. In this manner the purchasers have a guarantee that all detail work receives due attention and that no defective part or scamped workmanship creeps into the construction of any machine.

One of the first things done to a *fuselage* or wing taken out of store is to strip off the fabric, so as to ensure that all woodwork, metal fittings, etc., are in good condition. If a defective *longeron* or other part is discovered it is replaced with a new member made from materials passed by the Aircraft Inspection Department. All the wires of a *fuselage* are slacked off and the *fuselage* trued up again, not only to ensure its absolute truth, but also in order that any defect in the bracing, fittings, etc., from rust or any other cause, may be detected. The machine is gone over minutely, always under the supervision of the representative of the purchaser, and is trued-up, covered and doped. The wings are similarly treated, all parts found to be below standard being scrapped. In this connection reference should be made to the question of shrinkage. Owing to the care in storage, maintenance of an even temperature regardless of the time of the year, very few parts are found to have shrunk. If any are found they are replaced, or, if a number of parts have suffered from this cause, the whole component, such as a wing, is scrapped. That is not to say that it is merely flung on the scrap heap and left to anyone who will buy it for a few shillings. If that were done there might be a possibility of unscrupulous persons purchasing wings with defects in their parts and disposing of them for use in an aircraft. In order to avoid this, any component which is found to suffer from so many defects as to render its re-conditioning uneconomical has all its main parts destroyed. Thus such a wing has its spars

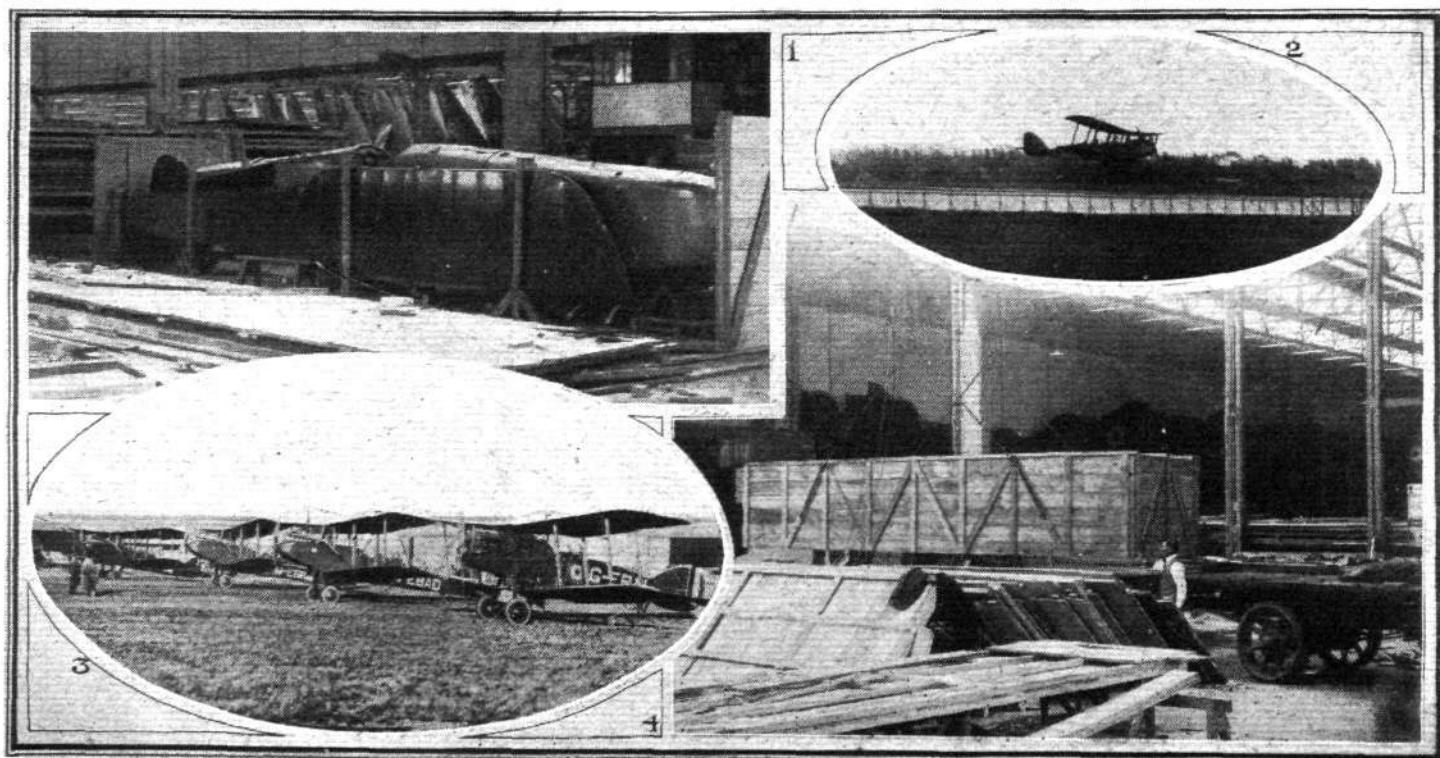
sawn through so that it could never be patched up to look sound and then be sold by a third party for use as a wing.

The same care as is given to the aeroplane or seaplane is bestowed upon engines. When taken out of store every engine is dismantled and all its parts micrometered and checked for size and truth. The engine is then erected and tested on a test stand, driving a calibrated fan. Such accessories as magnetos and carburettors are also tested individually, the magnetos being run at various speeds connected up to sparking plugs in an inspection chamber in which there is a compression corresponding to that in the engine, and through a window in which it can be seen if all plugs are sparking at all speeds. Carburettor jets are also tested by measuring the amount of liquid which flows through them in a given time under a given pressure, and such items as fuel and oil pipes, radiators, etc., are tested under pressure before being allowed to be put into the machines. All rubber pipes, even if appearing to be sound, are replaced by new pipes.

All this time the parts of a machine or engine are under the supervision not only of the A.D.C. but of the representative of the purchaser, and no part is put into the machine without the consent of both parties. If, as sometimes happens, a client desires modifications made to a machine, this is only done—provided the alteration is one of any importance to the structural or aerodynamical qualities of the machine—after consultation with the original designers. Thus if a machine was originally designed to take a Y engine, but the purchaser for some reason desires to have a Z engine fitted instead, this is only agreed to after the designer of the machine has been consulted and has given his consent. Thus the interests of the original designers are safeguarded, and no machine is allowed to be sent away with modifications which the original designers would not have sanctioned.

Having been finished under due inspection, the machines are erected and flown before the representatives of the purchasers, and a certain guaranteed performance is attained before the machine is considered ready for shipment. The Aircraft Disposal Company have evolved a method of packing which absolutely ensures that the machines will reach their destination in good condition. Usually two *fuselages* are packed in one case, placed side-by-side, but pointing in opposite directions, and they are so secured to the floor and sides of the case that it is absolutely impossible for them to work loose and come adrift. A similar proceeding is followed with engines. If these are to be sent a long distance they are put in tin-lined cases soldered up to exclude any moisture, and as they are well greased before shipment they reach their destination in excellent condition.

We might devote considerably more space to the various



THE AIRCRAFT DISPOSAL CO., WADDON : 1, Shows two D.H.9 fuselages on the floor of their packing case, the sides of which may be seen lying down ready to be put in place. 2, A D.H.9 landing after going through its acceptance flight. 3, A Bristol Fighter and three D.H.9's ready for tests. 4, A packing case containing two D.H.9 fuselages being hoisted on to the lorry which is to take them to the docks for shipment.

details of inspection, overhaul, etc., of the Aircraft Disposal Co. machines, but sufficient has, we think, been said to indicate that every care is taken to ensure that every machine and engine which leaves Waddon is in as good condition as it is possible for it to be, and that in many instances the machines are actually as good as new. To a certain extent they may be said to be better, since all wood in them is now very well seasoned and any further shrinkage is extremely improbable.

Col. Darby, of the London Office of the A.D.C., and Maj. Grant, who is head of the Waddon establishment, have had a difficult task, but one cannot visit the factory without

coming to the conclusion that they have discharged it in an admirable manner, and that customers have been satisfied is proved by the fact that more than one foreign Government has sent in a repeat order. That in itself is a good testimony to the soundness of the system adopted and rigidly adhered to. We are not permitted to quote the number of machines sold, but we think that if it were known it would stagger some people who profess not to believe in aviation. And as we have already said, we really doubt if any harm has been done to the industry as a whole, while undoubtedly a lot of very valuable propaganda work has been the result of all these machines being distributed all over the world.

The Royal Aero Club of the United Kingdom

OFFICIAL NOTICES TO MEMBERS

WHITSUNTIDE AVIATION MEETING

THE Royal Aero Club will hold an Aviation Race Meeting at Waddon Aerodrome, Croydon, on Saturday, June 3, starting at 3 p.m.

Members of the Club will be admitted free on presentation of their membership cards. Motor cars, 2s. 6d.

Programme

1. *Third Club Handicap* (16 miles). Prize £20. For machines with a speed not exceeding 120 m.p.h.
2. *Exhibition Flying* by J. H. James, on the Gloucestershire "Bamel," the holder of the British Speed Record.
3. *First Sprint Handicap* (16 miles). Prize £20. For machines with a speed of not less than 120 m.p.h.
4. *Balloon Sniping Competition*.—The entrant of the winner will receive a prize value £10. Entry fee £1. The Club Avro machines will be used for this competition. No charge will be made for the use of the machines.
5. *First Whitsuntide Handicap* (24 miles).—Prizes £70. For machines with a speed of not less than 100 m.p.h.
6. *Parachute Demonstrations*.
7. *Exhibition Flights*.
8. *Surrey Open Handicap* (16 miles). Prizes £40. For machines of all types.

The Races will be over a circuit, the machines remaining in sight of the spectators at the Aerodrome all the time.

Entries close on Monday, May 29, 1922, at 5 p.m. Entry fee, £1 for each event.

Further particulars of the Races may be obtained from the Club.

21st ANNIVERSARY BANQUET

THE year 1922 being the 21st Anniversary of the formation of the Royal Aero Club, the Committee has decided to celebrate the occasion by holding a Banquet at the **Savoy Hotel, London, on Tuesday, June 27 next.**

His Grace the Duke of Atholl, the President of the Club, will be in the Chair.

The Committee hopes that all members will make a special effort to be present on this occasion.

Small tables of eight covers will be arranged, and members wishing to make up parties must inform the Club not later than **Monday, June 19.**

The price of tickets (exclusive of wines, etc.) is £1 1s. Members may also obtain tickets for their friends (including ladies) to the extent of the accommodation available.

In order to assist in the arrangements early application for tickets is requested.

COMMITTEE MEETING

A Meeting of the Committee was held on Wednesday, May 17, 1922, when there were present Lieut.-Col. J. T. C.

French Government Support for Aviation Companies

How France is helping in every way to push along commercial aviation, thereby strengthening the national air fleet, is evidenced by the latest proposal of M. Laurent Eynac, Under-Secretary of State for the Merchant Marine and for Military Aviation. The object of this proposal is to facilitate the raising of private capital for the development of national aviation. His suggestion is that the State should encourage the flow of private capital to aviation companies by guaranteeing a fixed rate of interest on similar lines to the guarantees given to railway companies. The proposal is

Moore-Brabazon, M.C., M.P., in the Chair; Wing-Commander W. D. Beatty, C.B.E., R.A.F.; Lieut.-Col. John D. Dunville; Brig.-Gen. Sir Capel Holden, K.C.B., F.R.S.; Lieut.-Col. F. K. McClean, A.F.C.; Lieut.-Col. Alec Ogilvie, C.B.E.; Lieut.-Col. M. O'Gorman, C.B.; Mr. T. O. M. Sopwith; and the Secretary.

Election of Members.—The following new members were elected:—

Carl Louis Breeden.
Flying Officer Gerard Stephen Oddie, R.A.F.
Thomas Hornby.
Malcolm Norman Smith.
Major Jack Stewart.
Lieut.-Col. John Edward Tennant.

Racing Committee.—The report of the Racing Committee on the arrangements for the Whitsuntide Race Meeting was received and adopted.

F.A.I. Legal Commission.—The report of Major R. H. Mayo, the Club's representative at the meeting of the F.A.I. Legal Commission held in Paris on May 8, 1922, was received. A vote of thanks was passed to Major Mayo for representing the Club at the Conference.

21st Anniversary Banquet.—The arrangements for the Club's 21st Anniversary Banquet to be held at the Savoy Hotel on Tuesday, June 27, 1922, were approved.

Cartographic Committee.—The questions to be discussed at the meeting of the F.A.I. Cartographic Committee to be held at Brussels on May 26, 1922, were considered. It was decided not to send a representative, but to forward the Club's recommendations to the Chairman of the Conference.

International Air Conference, 1923.—The report of the Club's representatives at the Meeting held May 3, 1922, was received and adopted.

Aviators' Certificates.—The following Aviators' Certificates were granted:—

7925. Bryan Lillywhite. October 3, 1918.
7926. John Sills Charlton. April 28, 1922.

LE BOURGET MEETING, MAY 25-28

THE Aircraft Disposals Company have entered a D.H. 9 400 h.p. Liberty, pilot R. H. Stocken, to compete for the Lamblin Cup.

The course is Paris-Brussels, Brussels-London, London-Paris.

The London Terminal Aerodrome, Croydon, will be the London Control, and the Royal Aero Club will provide the officials.

Offices: THE ROYAL AERO CLUB,
3, CLIFFORD STREET, LONDON, W. 1.

H. E. PERRIN, Secretary.

strongly supported in the *Echo de Paris* by M. Henri De Kerillis, who publishes interesting figures on the present state of French commercial aviation.

The prosperity of air traffic on the various lines in operation is, he points out, steadily increasing, as is shown by the following figures:—Number of passengers carried, exclusive of personnel: In 1919, 1,184; in 1920, 6,419; and in 1921, 15,241. Postal traffic: In 1919, 466 kg.; in 1920, 6,039 kg.; and in 1921, 10,808 kg. Tonnage of parcels carried: In 1919, 14 tons; in 1920, 122 tons; and in 1921, 192 tons.

AIR MINISTRY TANK COMPETITION

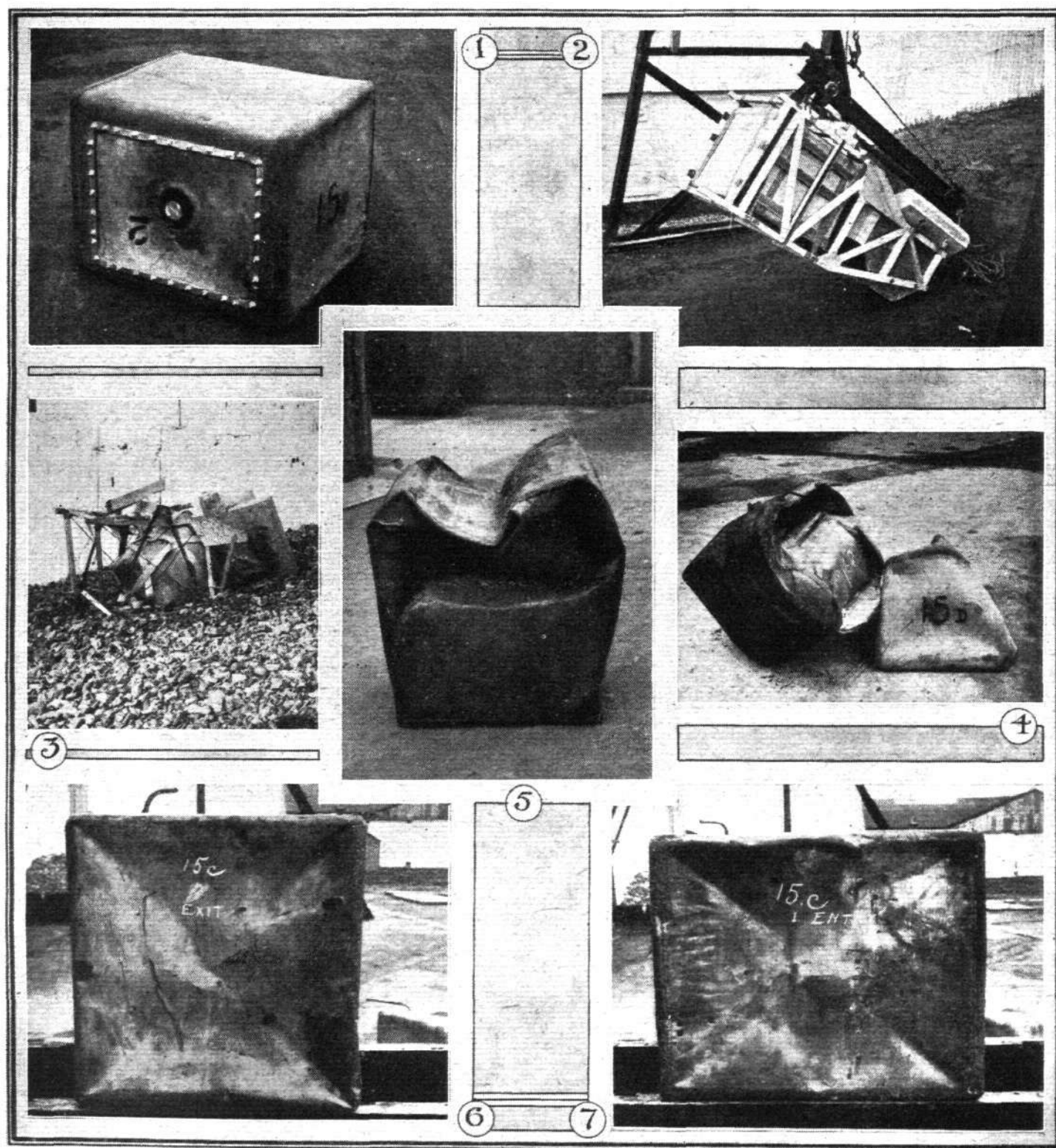
The Winner of First Prize

SOME PARTICULARS OF THE SILVERTOWN TANK

IN our issue of May 4, 1922, we published details of the three tanks which won First, Second and Third Prize in the Air Ministry Competition for safety fuel tanks for aircraft, and reference was also made to the nature of the tests. It may be remembered that in the preliminary tests the tanks were crashed by being mounted in the nose of a dummy fuselage, behind a dummy engine made of concrete. The final tests included also crashing tests as well as acceleration tests and firing tests. Twenty-six entries were received for the com-

petition, and 18 different types of tanks were actually submitted for the tests.

It will be remembered that the First Prize (£1,400) was awarded to the India-Rubber, Gutta Percha and Telegraph Works, Ltd., of Silvertown, London, E. 16. We understand that arrangements have now been made for the Silvertown tank to be marketed by Messrs. The Palmer Tyre, Ltd., of Shaftesbury Avenue, W.C. 2, whose reputation in the aviation world is such that anything handled by that firm is certain of



(R.A.F. photographs, Crown Copyright.)

The prize-winning Silvertown tank of the India-Rubber, Gutta Percha and Telegraph Works Co., Ltd. : 1 shows the tank complete with Silvertown detachable cover. In 2 the tank is shown mounted behind a dummy engine, ready for crashing tests. 3, tank after crashing. 4, tank and cover after crashing. 5, tank with cover removed showing that the steel shell with welded seams, even after crashing, does not leak. 6 and 7 show the tank after firing tests, indicating the holes made by bullets on entering and leaving the tank.

being received with due attention. We have been fortunate enough to obtain from The Palmer Tyre, Ltd., photographs of the tanks tested at Farnborough during the competition, and a few particulars relating to the development and construction of the Silvertown tank.

It will probably come as a surprise to many to learn that the idea of protecting a tank or any vessel against leakage by an external covering of rubber is not new. Yet we are informed that such an arrangement was suggested as long ago as 1877 by Col. C. V. Fosbery, and that experiments were carried out by the Silvertown Co. in that year. The idea at that time was to cover the hulls of ships with sheets of rubber, because it was found that the perforation made in this material by a bullet or similar projectile closed automatically after the bullet had passed through. The high cost of putting this invention to practical use for the purpose suggested was probably the main reason why the idea was not carried beyond the experimental stage until in recent years in connection with aircraft fuel tanks.

Mr. S. C. Mote, for many years chief of the experimental staff at Silvertown, has carried out a number of experiments on self-sealing petrol tanks, some in connection with the Board of Invention and Research, and some independently. He soon became convinced that success could not be attained until an alteration to the tanks themselves was made. This was not permitted during the early experiments, and it was not until some time later that redesigned tanks, in which the metal shell was made much thinner, were tested and found to be better than the original thick-walled tanks. It was found that the greater the resistance of the metal shell, the greater the damage done by projectiles. Then followed experiments with thin metal tanks covered with india-rubber, and these were found to be a great step forward. The earlier tanks, however, had the rubber covering vulcanised *in situ*.

For the Air Ministry Tank Competition, however, the Silvertown Co. designed a new type of tank, consisting of a thin shell of sheet steel, covered with a loose cover of india-rubber. The advantage of the detachable cover is that it can be stored and issued as required. Also in case of damage to a tank, a new tank, or the old one repaired, can be inserted in the cover without damage. Another advantage of the loose cover would appear to be the avoidance of heating the metal shell when the rubber cover is being vulcanised *in situ*, while one avoids sending the metal shell to be covered and can, instead, send the cover to the place where the tank is being made.

The Silvertown tank, which incidentally is patented both at home and abroad, has a very thin shell of sheet steel, the edges of which are welded together. This shell was made to the Silvertown Company's specification by Messrs. Brown, Lenox and Co., of Millwall, and it is a splendid testimonial to the skill of this firm in welding thin sheet steel that after the crashing tests the metal shell, although badly buckled, did not leak at all, the seams having withstood the shocks successfully. Also in the firing tests the tank came out very well indeed, and it was found that after several shots, including incendiary bullets, had passed through, with the incendiary projectiles still burning after passing through, there was no sign of deformation of the tank, showing that the metal shell had stood up well to its function as a supporting frame for the rubber, thus allowing it to continue its purpose as a tank.

While thus satisfied that the Silvertown tank was crash and fire proof, there was still some doubt as to the way in which very low temperatures, such as might be met with at great altitudes, would affect the rubber. Extensive tests were consequently carried out, and a covered tank was subjected to the low temperature of -30°F. , and to firing tests, when it was found that the rubber stood the test perfectly.

Apart from the composition of the rubber cover, which is, of course, the secret of the makers, much of the success of the Silvertown tank is due to the manner of securing the loose cover, which is made in one piece, to the main jacket. One of the accompanying photographs gives some idea of how this cover is secured, the edges being fastened in such a manner as to be leak-proof, and to prevent any escape of petrol between the main jacket and its detachable cover.

There appears to be little doubt that the new fire-proof tank represents a very real step forward, and as the weight is but very little in excess of that stipulated as a maximum for the competition (1.9 as against 1.75 lbs./gallon capacity), the fitting of Silvertown tanks should not entail an undue addition to the weight of an aircraft, considering the very great advantage of having tanks which are extremely unlikely to leak and cause a fire in anything except an accident so severe that it would matter but little whether or not the machine caught fire, as far as saving the occupants was concerned. It might be mentioned that the Silvertown tanks were heavier than any of the other two which won Second and Third Prizes, and that, therefore, it must be presumed that the judges awarded First Prize on other merits which more than outweighed the extra weight of the Silvertown tank.

THE LONDON-CONTINENTAL SERVICES

FLIGHTS BETWEEN MAY 14 AND MAY 20, INCLUSIVE

Route†	No. of flights*	No. of passengers	No. of flights carrying		No. of journeys completed†	Average flying time	Fastest time made by	Type and (in brackets) Number of each type flying
			Mails	Goods				
Croydon-Paris ...	48	94	13	31	43	h. m. 3 0	D.H. 34 G-EBBQ (2h. 5m.)	B. (4), D.H. 4 (2), D.H. 9 (2), D.H. 18 (3), D.H. 34 (4), G. (6), H.P. (1), H.P.W8B (2), Sp. (4), W (1).
Paris-Croydon ...	42	84	9	26	37	2 44	D.H. 34 G-EBBS (2h. 9m.)	B. (3), D.H. 4 (1), D.H. 18 (3), D.H. 34 (4), G. (5), H.P. (1), H.P.W8B. (2), Sp. (5).
Croydon-Brussels ...	5	15	2	3	4	2 9	D.H. 34 G-EBBR (2h. 6m.)	D.H. 18 (1), D.H. 34 (2).
Brussels-Croydon ...	4	10	—	2	4	2 49	D.H. 34 G-EBBR (2h. 35m.)	D.H. 18 (1), D.H. 34 (2).
Croydon-Rotterdam- Amsterdam.	8	4	5	7	8	2 26§	Fokker H-NABD (2h. 19m.)	E. (6).
Amsterdam-Rotterdam- Croydon.	9	6	9	6	7	3 0§	Fokker H-NABI (1h. 7m.)	F. (7).
Totals for week ...	116	213	38	75	103			

* Not including "private" flights.

§ Rotterdam.

† Including certain journeys when stops were made *en route*.

‡ Including certain diverted journeys.

Av. = Avro. B. = Breguet. Br. = Bristol. Bt. = B.A.T. D.H.4 = De Havilland 4, D.H.9 (etc.).
F. = Fokker. Fa. = Farman F.50. G. = Goliath Farman. H.P. = Handley Page. M. = Martinsyde. N. = Nieuport.
P. = Potez. R. = Rumpier. Sa. = Salmson. Se. = S.E.5. Sp. = Spad. V. = Vickers Vimy. W. = Westland.

The following is a list of firms running services between London and Paris, Brussels, etc., etc.:—Co. des Grandes Expresses Aériennes; Daimler Hire, Ltd.; Handley Page Transport, Ltd.; Instone Air Line; Koninklijke Luchtvaart Maatschappij; Messageries Aériennes; Syndicat National pour l'Étude des Transports Aériens; Co. Transaérienne.

Incidental Flying.—During the week Capt. Stocken made test flights on five D.H. 9's for the Aircraft Disposal Co.

ROUND-THE-WORLD FLIGHT

Farewell Luncheon to Aviators

MAJOR WILFRED BLAKE, Captain Norman Macmillan and Lieut.-Col. L. E. Broome were entertained at luncheon at the Hotel Victoria, Northumberland Avenue, by the proprietors of the *Daily News* on May 22. Lord Montagu of Beaulieu presided, and with him sat the three aviators and the Director of Civil Aviation, Maj.-Genl. Sir Sefton Brancker. Lord Montagu read a telegram from H.R.H. the Duke of York, regretting his inability to be present, and adding that he sent the three aviators his best wishes for success.

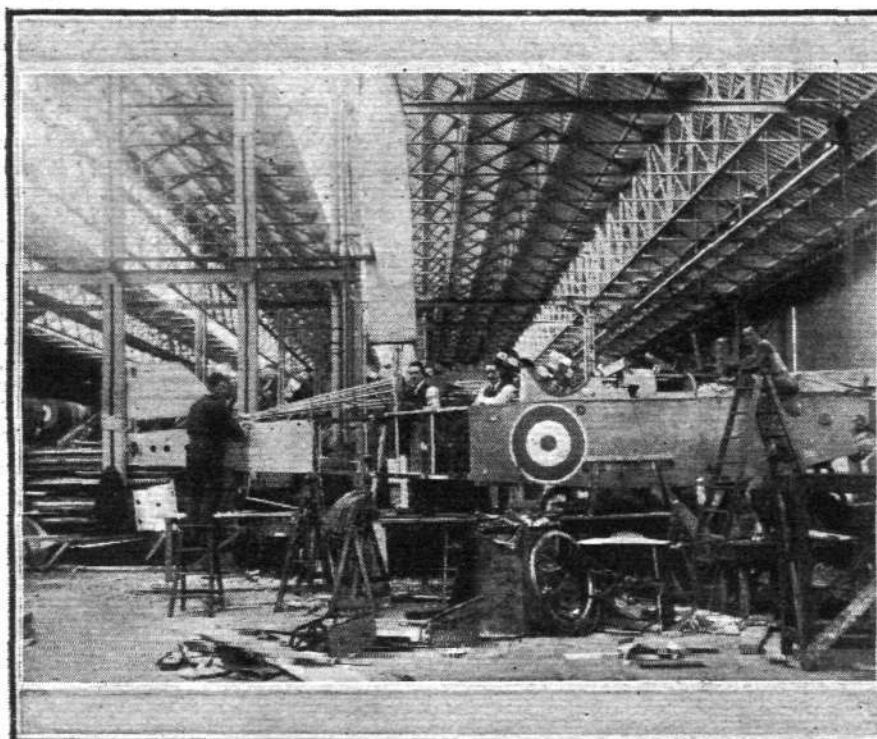
In proposing the health of the three "very gallant English gentlemen," as he described them, Lord Montagu said he took special pride in Maj. Blake because he was a Beaulieu boy. He was now setting out upon a far greater adventure than any which he had ever had in the woods at Beaulieu as a boy. With regard to the expedition Lord Montagu stated that it was a purely sporting effort, and was not being carried out in order to advertise any commercial object. The entire money for the expedition was being provided by a private individual whose name he did not know, and Lord Montagu also referred to the assistance which was being received

Air Ministry, the R.A.F. and various Governments. Canada had promised to erect for them a D.H. 9 at Vancouver and an F. 3 flying boat at Winnipeg. The Aircraft Disposal Co. had worked day and night for a fortnight to get the machine ready for the start on May 24, and he thought it was nothing less than a miracle that the machine had been got ready. They hoped, he said, to make a trial flight that evening.

Lieut.-Col. Broome said that they did but follow the road that Sir Ross Smith had shown them, and reminded the guests that the word Blake rhymed with Drake.

Capt. Macmillan also made a short and modest speech, but he is evidently very much less nervous when starting out for a tour round the world than he is when faced with the task of speaking in public.

Maj. Egbert Cadbury, D.S.O., D.F.C., who was introduced by Lord Montagu as "the only living Englishman who had brought down two Zeppelins," thanked them all for coming to wish the aviators God-speed. He thought that they would find that the most difficult part of their journey would be from America to England in their F.3, referring to a way



THE FLIGHT AROUND THE WORLD : On the left is seen the fuselage of the D.H. 9 on which the aviators are to attempt the flight from London to Calcutta. The photograph was taken at the Aircraft Disposal Co.'s works at Waddon on Thursday of last week, indicating that no time was lost in getting the machine ready in time. On the right is a snapshot of Capt. Macmillan and Maj. W. Blake, taken at Croydon.

from the Air Ministry and from India. It was hoped, he said, that the aviators would be back in this country by September 7.

Sir Sefton Brancker, in seconding the toast of the aviators, remarked that Sir Ross Smith had intended to start towards the end of April, when the best climatic conditions obtained. When Sir Ross met his tragic death, Maj. Blake resolved to attempt the flight, and it was a remarkable fact that within a month he was ready to start. The Director of Civil Aviation concluded by advising the aviators to take no foolish risk, and said their motto should be "Safety First."

Maj. Wilfred Blake stated that if it had not been for the generosity of one man, whose name he did not wish to announce, and who was not known to either Capt. Macmillan or Lieut.-Col. Broome, the flight could not have taken place. He paid a glowing tribute to Capt. Macmillan's skill as a pilot, and expressed the opinion that when they got home—he would not say if, because they were going to get home—the success of the expedition would be primarily due to Capt. Macmillan. When Lieut.-Col. Broome, whom he had known for a number of years, offered his services, he (Maj. Blake) jumped at the opportunity of having a man with a special knowledge of the Aleutian Islands and Alaska, who would also act as navigator, engineer and photographer. Maj. Blake also referred to the help given or promised by the

this type of machine has of keeping on bouncing in anything but a calm sea.

Lord Riddell said that so far as he knew the *Daily News* was the only paper which had to its record the honour of having produced a man who had brought down two Zeppelins. That, he thought, was not a bad achievement for a pacifist organ, and only showed that it did not matter what an Englishman's views might be, if you touched him on the raw he would hit back. Lord Riddell then proposed a vote of thanks to Lord Montagu for having presided at the gathering.

Among the guests were Lord Ashfield, Mr. G. Balfour, M.P., Capt. Wedgwood Benn, M.P., Sir Robert Bird, M.P., Sir F. Bowater, Mr. C. W. Bowerman, M.P., Maj.-Genl. Sir Sefton Brancker, Sir Harry Brittain, M.P., Maj. Egbert Cadbury, Mr. J. R. Clynes, M.P., Viscount Curzon, M.P., Brig.-Genl. Festing, Sir Walter de Frece, Sir Charles Higham, M.P., Sir George Lawson Johnston, Mr. Artemus Jones, K.C., Lieut.-Comdr. the Hon J. M. Kenworthy, M.P., Sir George Lewis, Sir Hedley Le Bas, Maj.-Genl. Sir Fred. Maurice, Sir E. M. Mountain, Sir Frank Newnes, Lord Riddell, Sir A. Robbins, Mr. Lyle Samuel, M.P., Maj.-Genl. Sir Fred. Sykes, Mr. George Terrell, M.P., Sir Percy Thompson, Brig.-Genl. Sir H. W. Thornton, Sir Charles Wakefield, and Sir Samuel Waring.

WIRELESS POSITION-FINDING FOR AIRCRAFT

THE Air Ministry announces that regular facilities for wireless direction-finding are now offered to the Cross-Channel Air Services. Since October of last year a wireless "position-finding" system has been under trial to enable air pilots to ascertain their position when flying on the Cross-Channel Airways. This system has, on several occasions, proved to be of particular advantage in adverse weather conditions, and has been introduced as a regular feature of the civil aviation wireless service. It is a further development of wireless direction-finding which, during the past two years, has proved of such great value to air navigation.

Until last October direction-finding work was carried out only by the Civil Aviation Wireless Station at the London Air Port of Croydon, and was limited to giving a pilot his compass bearing from that station. The direction-finding station at Pulham Airship Base, Norfolk, has been successfully operated as the second station of the system during the past six months, thus enabling two bearings to be taken simultaneously upon a single aircraft, and its position determined by plotting the bearings upon a chart, the point of intersection giving the aircraft's position.

Direct intercommunication between Croydon and Pulham is effected by radio-telephony, and the pilot can be informed of his position with a high degree of accuracy under normal conditions. The radius of action for giving position is approxi-

mately 200 miles from the control station, which in this case is Croydon. Although primarily designed for radio-telephony, the system is equally adaptable for radio-telegraphy, the change over being carried into effect by a simple switch in a few seconds. The position can normally be given within two minutes. Similar facilities can be afforded from Croydon to aircraft engaged on inland flights and services.

Several instances have already occurred in cases of fog and storm where pilots have been informed of their position and enabled to reach their aerodromes in safety. The most noteworthy occasion was in February last, when an aeroplane, flying over the airway between Paris and London, was navigated entirely by wireless, the pilot seeing the ground only on one occasion for a few minutes.

Pilots and navigators have been strongly urged in a Notice to Airmen which has just been issued explaining the working of the system, to make a practice of utilising on every flight this important aid to navigation, as the experience gained in the use of position-finding in good weather, when pilots should be able to check the accuracy of the positions, will add to their confidence and proficiency in using the system when flying in bad weather.

It is therefore hoped that they will take full advantage of the opportunity thus offered of increasing the security of air navigation.

LOCALISED RADIO LANDING

RADIO direction-finders and other radio devices have been in use for some time to assist aircraft to land during the night, during fog, or at other time of poor visibility. The most usual method is to transmit from an ordinary elevated antenna, at the landing field, radio signals which are received on a direction-finder located on the aeroplane. This method gives the direction of the landing field, but does not give accurate information as to its distance when the machine is near the landing field.

Several years ago the U.S. Bureau of Standards was called upon to develop a method to assist aircraft accurately to locate the landing field when the machine was quite near. It was desired to develop a method which would give a good signal, easily audible over a large area from comparatively high altitudes, but which would be localised within a small area when the machine was near the ground—an important point.

A method of induction signals was first tried, using 500-cycle alternating current, which flowed through a large horizontal, single-turn coil, 600 by 800 ft., at the landing field. Reception on the aeroplane was made using horizontal coils wound on the lower wings. It was found that this method gave a signal which was audible over a wide area when the machine was near the ground, but was confined to a small area at elevations of about a mile.

This was not satisfactory, so the use of radio frequency waves was therefore undertaken. Two horizontal coils identical in construction were placed one above the other so that their axes coincided. The current in one coil flowed in a direction opposite to the current in the other coil. A fairly high radio frequency, suitable for direction-finding work, such as 300 kilocycles, was used. A calculation was made which indicated that the signals radiated from the two coils would be strongest for an aeroplane flying in a given horizontal plane, whenever the machine was inside a comparatively small ring-shaped area located above the landing field.

* Extract from the *Radio Service Bulletin* (U.S.A.).

SIGNALS FOR AEROPLANES*

A careful experimental investigation was made under actual flying conditions, and the results of this calculation were verified. Signals were received on the aeroplane only when it was nearly above and in the immediate vicinity of the landing field.

The Bureau of Standards has just published a paper giving the theory of the radiation from an antenna consisting of two horizontal coils, as used in this work. It is found that if a vertical coil antenna is used for reception on the aeroplane, and if the latter flies horizontally, the maximum signal is received when a line joining the aeroplane to the transmitting coils makes an angle of 30 degrees to the vertical, assuming that the effect of the earth is negligible. The region of space within which the signal can be detected by receiving instruments of given sensibility has nearly the form of the space between two inverted co-axial vertical circular cones of finite length having their common apex at the transmitting station. The upper limit of the region within which the signal is audible depends on the sensitivity of the receiving apparatus, and is not as clearly defined as the bounding conical surfaces. The signal vanishes when the aeroplane is directly over the transmitting station, and vanishes rather soon after the aeroplane passes over the region of maximum signal and flies away from the station. The effect on the transmission of having a perfectly conducting earth directly under the transmitting coils has also been investigated, and it has been found that in this case a maximum signal is obtained when the line joining the aeroplane to the transmitting station makes an angle of 26 degs. 34 mins. with the vertical.

It is expected that these theoretical studies will be very useful in the design of radio transmitting stations for sending localised landing signals to aeroplanes. The results of these investigations are given in Bureau of Standards Scientific Paper No. 431: "The Field Radiated from Two Horizontal Coils," by Gregory Breit. A copy may be obtained (price 5 cents.) from the Superintendent of Documents, Government Printing Office, Washington, D.C., U.S.A.

THE ROYAL AIR FORCE IN INDIA

Sir John Salmond's Mission

FOR some time now it has been known that all was not well with the R.A.F. in India. A very serious shortage of spare parts has interfered with the efficient working of the force, and it has been alleged that, to all intents and purposes, there is not a spare propeller in the whole of India, so that if a propeller be damaged, the entire machine is out of commission. From Simla it is now reported that an additional allotment of money has been made to the R.A.F., and probably in the same connection, it is of interest to note that Air Vice-Marshal Sir John Salmond is leaving at once for India, accompanied by Group Captain J. A. Chamier and Wing Commander F. E. T. Hewlett. It is understood that these three officers

will form a committee of investigation to look into the re-organisation of the R.A.F. in India.

On October 1, when these investigations have been completed, Sir John Salmond will proceed to Irak to take up his command there, when the administration of that region will pass, as promised in the House, from the Army to the R.A.F. In the Air Estimates provision was made for two Air Marshals, and it was generally believed that the second of these (Sir Hugh Trenchard already held that rank), would be the officer taking over the command in Irak. Thus, probably when Sir John Salmond takes over his new post, he will do so as Air Marshal.

LONDON TERMINAL AERODROME

Monday evening, May 22, 1922

THERE was quite an influx of passengers on Saturday, although, taking the week as a whole, there has been no sign of any great improvement, and there was still accommodation in the numerous machines to and from Paris for three or four times as many travellers as were actually carried. Weather conditions have been against punctuality on several days during the week.

In spite of good flying weather at Croydon, with visibilities ranging up to 20 miles, there has on several days been drifting fog in the Channel and along adjacent coasts. On Wednesday Mr. Bradly, piloting the Instone D.H. 18 G-EARO, was *en route* from Croydon to Le Bourget when he ran into thick fog in the Channel. After flying round in the fog for something like two hours, he eventually landed at Dymchurch, proceeding to Paris the following day.

The same evening one of the K.L.M. monoplanes, *en route* from Amsterdam to London, and piloted by Mynheer Warnaar, was forced to descend by weather when over the English coast. From reports made by people in the district, the visibility was apparently about 25 yards, and those on the ground could hear the machine, although they could not see it. Finally Mynheer Warnaar was compelled to descend, and, in doing so, crashed the monoplane, and slightly injured his passenger. It appears that he crashed through two trees, which afterwards looked as though they had been struck by lightning, and landed perilously near a house on one wing-tip—which, so Capt. Leverton informs me, evidently saved the pilot. The interesting part about the whole affair was the cool way in which the pilot took the catastrophe. He was, according to all accounts, not in the least shaken, and evidently regards a difficult and dangerous forced landing as all in the day's work.

A French Statement on the Fare Question

WITH regard to the rumour of fare-cutting, which has appeared in certain newspapers, and was mentioned in these columns last week, I have it on no less an authority than that of Mr. Hyat, the London manager of the Grands Express—who tells me he is speaking also for Mr. Grosfils, of the Messageries Aériennes—that the French air companies have not the slightest intention of cutting the fares, and that they intend, in fact, making no alteration whatever unless British companies take the lead in this matter.

Speaking of the Grands Express, the Goliath, which was so skilfully repaired, after having its nose knocked off in contact with one of the shed walls, flew back to Paris in quite good time, despite the handicap of the temporary square and fore-shortened nose. The whole matter reflects great credit on the skill of the mechanics and pilot concerned.

The Instone Air Line have been running the new Brussels service with commendable regularity, although they are not as yet receiving much support in the way of passengers. Gen. Brancker travelled over in one of the D.H. 34's during the week, occupying the seat outside with the pilot.

I understand there is now a regular consignment for the Instone line's early morning machine to Paris, which amounts to a minimum of at least 1,000 lbs. weight, and, with the ordinary goods traffic in addition, the weight of goods on this machine daily is in the neighbourhood of half a ton.

Further Experiments with Parachutes

SOME very interesting experiments with new forms of parachutes are being made with the Royal Aero Club's Avros, piloted by Capt. Muir, of the Surrey Flying Services. These parachutes are the invention of two Egyptian enthusiasts, and the main idea appears to be to make it possible to vary the rate of descent of the parachute not only by an adjustment before it is released, but also while actually descending earthward. I understand that very exhaustive tests—including tests to destruction—are to be made with this new parachute.

In order to be in keeping with the general gay appearance of the offices on the aerodrome, the model aeroplanes on the traffic-movement board are now being painted with the "house" colours of the various air lines, and a key to these colours has also been painted on the side of the board. Some of the newly-painted models are already in use, and the board presents a study in "jazz" when there are a number of machines *en route*.

Daimler airways are maintaining a high standard of efficiency in the running of their machines, and are with few exceptions—due mainly to weather—keeping three services a day in each direction going with only three machines. This calls for a very high pitch of organisation, and is a tribute to

the work of all concerned. I notice also that the number of passengers carried by this line is increasing steadily, if somewhat slowly.

An Object-Lesson in "Wind Reading"

THE meteorological section have now got their wind indicator working, and this is proving of great interest to pilots, being much more reliable than the old wind-sleeve. It is also an object-lesson in the variation that occurs with even the most steady wind, the automatic pen registering every fluctuation, and showing how the wind is made up of constant gusts and lulls, while the direction shifts backward and forward within a radius of several degrees constantly. The notice-board on which the map of the weather is displayed has also been re-erected.

Handley Page Transport have been running their new W. 8 B's constantly during the week, and have had quite good loads, although they have been by no means full. The wonderful inherent stability of these machines was demonstrated when Mr. Wilcockson, piloting the "Princess Mary" from Paris to London, flew from above Beauvais until he arrived over Croydon without touching any controls other than the rudder, which of course was necessary to steer the machine.

A new motor "fire engine" has made its appearance on the aerodrome, and is the pride of the air-station fireman, who spends much time and energy keeping its bright red paint spotless. It is equipped with chemical extinguishers, and has been allotted a position alongside the ambulance—so that, as some caustic wits say, "all visitors to the aerodrome can have the horrors of flying duly brought home to them."

Trans-European Pilot's New Tour

MR. ALAN J. COBHAM, piloting one of the De Havilland Aircraft Company's D.H. 9 c's, landed at the air station on Thursday in order to pass through Customs on his way to Paris on another European air-tour. This time he is carrying a South American, Mr. W. S. Gosling, who intends to visit Paris, Dusseldorf, Berlin, Prague and Vienna, and be back in London within a week. Mr. Gosling told me that he has business in each place, and that, owing to having to catch a boat for South America on June 3, and having still some business to clear up in London, he had to do his Continental trip in a week, and that an "air-taxi" was the only machine making such a thing possible. Mr. Gosling, by the way, is an enthusiastic aviator, and has his own Renault-Avro in South America, which he pilots himself. He is a friend of Major Kingsley, who has done so much to promote aviation in the Argentine.

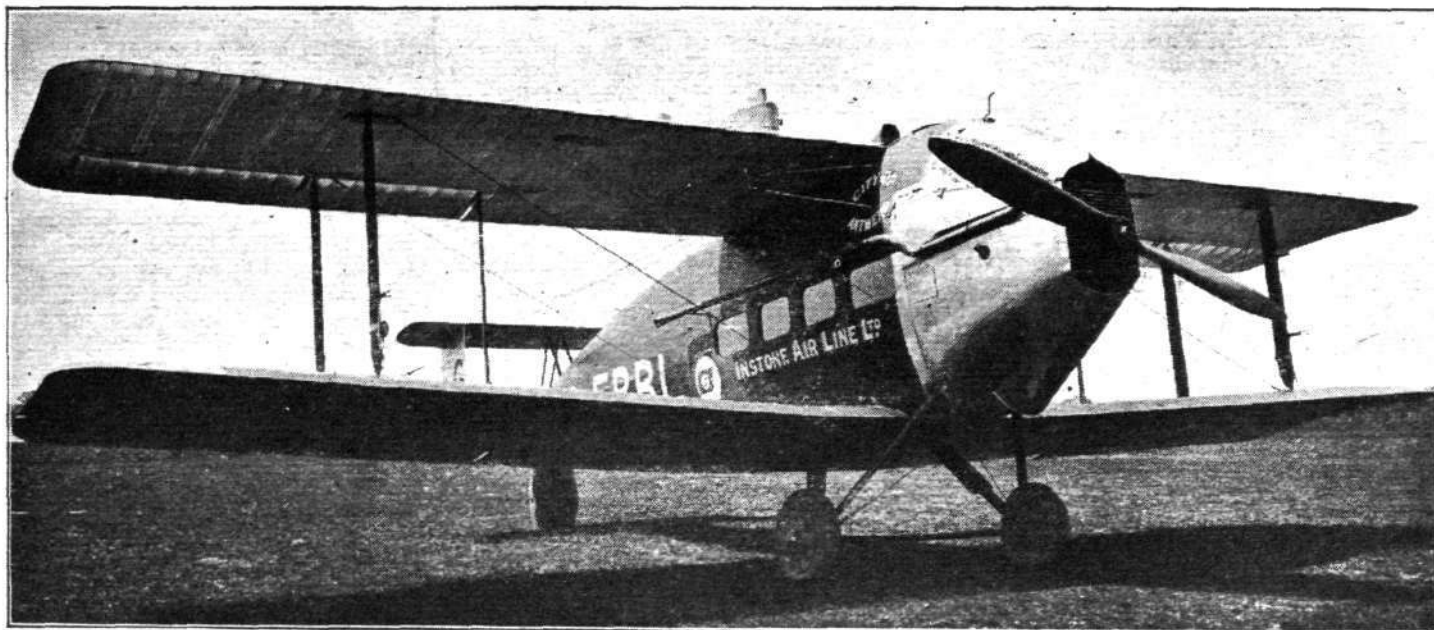
The double service of the K.L.M. is proving quite a success as far as the goods traffic is concerned. This is even larger than last year, and on occasion Capt. Leverton is hard put to it to find accommodation for the volume of merchandise consigned to Holland by the K.L.M. The difficulty of the load from Holland has not, however, been solved yet, and the loads on the machines arriving at the air-station from Amsterdam and Rotterdam still, generally speaking, remain disappointing.

An Air-Special which Vanished

ON Saturday morning at 8 a.m. Mr. Barnard, of the De Havilland Company, who was carrying a passenger in a D.H. 9 to Le Touquet, started off from Croydon, but made a temporary halt at Lympne. Starting away from there again at 10 a.m., he vanished so to say "into the blue," and nothing more was heard of him again until Monday morning. Great anxiety was, of course, felt as to what had happened. When much-delayed tidings did come through, it transpired that he had alighted at a remote point on the French coast with engine-trouble.

On Sunday Mr. Keys, a new Instone air-line pilot, left for Brest in the D.H. 4A carrying a correspondent of a London newspaper, who was travelling there by "air special" in order to send a descriptive cable in connection with the lamentable sinking of the liner "Egypt." Mr. Keys was duly reported as having reached Brest on Sunday evening.

There has, by the way, been quite an epidemic of under-carriage trouble. On Saturday a Handley Page W. 8 damaged an under-carriage coupling when getting off for Paris, and it was not until the machine was nearly at Lympne that the wireless people established communication with the pilot, Mr. Olley, and told him what had happened. He returned to Croydon and made a clever landing. Many critics blame the state of the aerodrome for these mishaps, declaring it to be much too "bumpy" in parts.



THE VICKERS "VULCAN," 360 H.P. ROLLS-ROYCE "EAGLE" ENGINE.—This machine was described and illustrated in detail in our issue of May 4, 1922, but photographs have not been available until now. The machine carries eight passengers in a roomy cabin, and will shortly be put on the London-Brussels service by the Instone Air Line.

THE ROYAL TOURNAMENT

FOR this year's Royal Tournament, which was opened at Olympia on Thursday of last week by H.M. the King, who was accompanied by Queen Mary, the organisers have followed the lines of the pre-War tournaments, two of the most popular features being the musical drive by the Royal Horse Artillery (O Battery) and the musical ride by the 1st Life Guards. Royal Navy and Royal Marines vie with each other in their deft handling of a field gun, and the Royal Engineers build a bridge in double quick time, while rope climbing seems absurdly easy after you have seen the men from the R.N. School of Physical and Recreational Training at Portsmouth go through their wonderful show. Guard mounting a couple of centuries ago is acted by the Brigade of Guards, and this,

together with the combats and tussles, not done in too serious a style, by the Army P.T. Staff with broadswords, daggers, rapiers, quarterstaves, etc., give suggestions of what the good old days may have been like. The Navy's pageant, "Past and Present," is well organised and carried out, and it should stimulate the R.A.F. to work out an item for future displays. As it is, the R.A.F. is only represented in the competitions, the heats for which are carried out in the mornings. But of course, the R.A.F. cannot very well be cabined and confined in Olympia, and in any case we shall see it playing its part in helping to swell the Service charities at the R.A.F. Pageant later on in the season. In the meantime, the Royal Tournament well merits a visit, and a double visit.



THE VICKERS "VULCAN" COMMERCIAL MACHINE: Three-quarter rear view. A feature of this machine is the exceptionally low landing speed of 40 m.p.h., and the quick pull-up after touching. The "Vulcan" also gets off after a very short run, and climbs steeply. The power expenditure is only 45 h.p. per passenger carried, so that the machine should be very economical.

AERIAL WARFARE AT FARNBOROUGH

IN the presence of the King and Queen, who were accompanied by Lady May Cambridge, Lady Trefusis, Miss Morland, Gen. Lord Cavan, Gen. Sir T. L. M. Morland, Sq.-Ldr. C. H. B. Blount, M.C., Sq.-Ldr. R. M. Hill, M.C., A.F.C., and Mr. Sydney Smith (Superintendent, R.A.E.), a magnificent military display by aircraft was carried out at Farnborough last Saturday. After inspecting the Tank Corps at Pinehurst, and the R.A.F. aerodrome on Cove Common, their Majesties took their seats in the Royal enclosure on Cove Hill, from where they had an excellent view of the wonderful displays put up by a variety of types of aircraft. In the centre of the aerodrome—where in the early days S. F. Cody made his first flight—two lines of flags were set out, representing infantry. Four Bristol Bombers, piloted by Flt.-Lieut. H. G. White and F.Os. B. R. Harris, J. F. McBain, and C. H. Harrison, first circled over the Royal party in diamond formation, and then, changing into column formation, swooped down upon the "infantry" and one by one discharged their bombs. Nearly all the latter found their mark, and the remainder were sufficiently close to do considerable damage.

After this one of the latest tanks set out with the object of destroying a stronghold, the locality of which was unknown

to the tank commander. Circling above, however, was an aeroplane, piloted by Flt.-Lieut. King, who spotted the stronghold and directed the tank on to its target by means of wireless telephone. Once found the tank "sat" on the stronghold to flatten it out, revolved several times upon its own base just to grind things up a bit finer, and then returned to its base. Incidentally, some very interesting demonstrations in wireless telephony in connection with aircraft were investigated by their Majesties, conversations being carried on with Flt.-Lieut. V. H. Tait piloting a machine several thousand feet above.

Officers of the Experimental Section, R.A.E., then gave a remarkable and thrilling display of aerial manoeuvres vulgarly known as "stunts." An S.E. 5A and a Nieuport Nighthawk had a competition to see who could remain out of normal flying position the longest. Then a D.H.10 (two 400 h.p. Liberties), returning from a "raid," was very much worried by a swarm of smaller fry (or "fly") which was doing its best to obstruct the "raider's" return.

At the conclusion of the display the King and Queen passed down along the line of machines and congratulated and chatted with the pilots. They then inspected the anti-aircraft guns on Cove Hill.

A BRITISH FLYING BOAT IN THE MEDITERRANEAN

Fine Performance by Air-Commodore Samson and His Crew

To those who, like ourselves, believe in the seaplane as a means for linking up the various parts of our far-flung Empire, the reports, meagre as they are, of the splendid performance of a British flying boat in the Mediterranean give a very welcome indication that active work is being done, although little enough is heard of it, by the sea-going sections of the R.A.F. Working with the Navy, much is done of which the outside world is not allowed to learn, but now and then a flight is made which, by its very nature, cannot well be kept a secret. A case in point is this flight of Air-Commodore Samson's.

It appears that a flying boat, of which no particulars are available beyond the fact that it was built in this country, sent out to Malta and erected there, the Neptune, under Air-Commodore Samson, Chief Air Officer at Malta, who had with him Squadron-Leader Gordon, Lieut. Scriven and two engineers, left Malta on May 16 en route for Gibraltar. The Neptune left Malta at 6.35 a.m. on May 16, and arrived at

Algiers at 9.45 p.m. Next morning, May 17, she left Algiers at 7 a.m. and arrived at Oran, Algeria, the same day. On May 19 she left Oran at 4.55 a.m., arriving at Gibraltar at 9.52 a.m. The average speed on the trip is stated to have been 60 knots.

The return trip was started at 2.25 p.m. on May 20 against a strong easterly wind. When about 30 miles west of Oran she developed engine trouble and was obliged to descend. She is reported to have been towed into Oran, but no information is available concerning her condition after being towed 30 miles against a strong easterly wind. The crew is, however, reported safe.

Although thus being unable to complete her journey as planned, the flight of the Neptune is a very fine one, and gives an indication of what might be done with proper organisation in the way of speeding up mails to and from the East by means of seaplanes. It is to be hoped that more flights of a similar nature will be heard of in the near future.

ROYAL AERONAUTICAL SOCIETY NOTICES



Election of Members.—The following members were elected at a Council Meeting held on Tuesday, May 16:—

Associate Members.—H. V. Bullbrook, E. C. Gaccon, F. W. Gaccon, P. Hoggins, P. E. Williams; James Hamilton (Scottish Branch).

Student.—W. K. Mackenzie.

Wilbur Wright Lecture.—The Annual Wilbur Wright Lecture will be delivered at 5.30 p.m.

on June 15, at the Royal Society of Arts, John Street, Adelphi, when Lieut.-Col. A. Ogilvie, C.B.E., F.R.Ae.S., will read a paper on "Some Aspects of Aeronautical Research."

Committees.—The following is the full list of Committees appointed for the year ending April, 1923:—

Candidates' Committee.—Prof. L. Bairstow, Prof. B. Melvill Jones, Wing Commander T. R. Cave-Browne-Cave, Sqdn.-Ldr. R. M. Hill, Prof. C. F. Jenkin, Mr. W. O. Manning, Dr. N. A. V. Piercy, Dr. A. J. Sutton Pippard.

Finance Committee.—Mr. Griffith Brewer, Lieut.-Col. A. Ogilvie, Mr. A. E. Turner (Hon. Treasurer), Mr. F. P. Walsh.

Publications and Library Committee.—Prof. L. Bairstow, Major F. M. Green, Sqdn.-Ldr. R. M. Hill, Major A. R. Low, Mr. J. D. North, Lieut.-Col. H. W. S. Outram, Dr. A. J. Sutton Pippard, Mr. J. L. Pritchard (Editor), Maj. R. V. Southwell.

The Chairman (Lieut.-Col. M. O'Gorman) and Vice-Chairman (Air Commodore H. R. M. Brooke-Popham) are *ex-officio* members of all the Society's Committees.

W. LOCKWOOD MARSH,

Secretary

UNVEILING BRITISH FLYING SERVICES WINDOW IN WESTMINSTER ABBEY

By the generous gift of Mrs. Louis Bennett, of West Virginia, U.S.A., whose son, Lieut. Louis Bennett, was killed in 1918 while serving in France as a pilot with No. 40 Squadron, Royal Air Force, a window to the memory of all officers and airmen of the British Flying Services who fell in the Great War (1914 to 1918) has been erected in Westminster Abbey.

The unveiling ceremony, which takes place in the Abbey at noon Friday, May 26, will be carried out by Capt. the Right Hon. F. E. Guest, C.B.E., Secretary of State for Air. The dedication service will be conducted by the Very Rev. the Dean of Westminster, assisted by the Abbey Staff. The Air

Council and Air Officers Commanding R.A.F. Areas and Commands will attend the ceremony, together with a representative party of the Royal Air Force.

Friends and relatives of members of the Flying Services who lost their lives during the War are invited, and are asked to regard this announcement as an official invitation. No tickets of admission are required, and entry to the Abbey can be made by any door except the Great West Door.

The Central Band, Royal Air Force, under the Director of Music, Flying Officer J. H. Amers, will be in attendance.

The window is the design of Mr. H. Gylls, of Messrs. Burlinson and Gylls.

IN PARLIAMENT

Aircraft Synchronising Gun Gear

VISCOUNT WOLMER, on May 17, asked the Secretary of State for Air whether he is aware that Mr. A. Heane, of Frimley Road, Ash Vale, applied in 1916 to the Admiralty for their sanction for a patent in connection with guns for aircraft, whereby, by means of a synchronising gear, it was made possible to fire through the propeller of an aeroplane; that this invention was submitted to the Ministry of Munitions, and examined by the Air Board in 1917; that the invention was subsequently adopted by the Air Ministry; and, seeing that Mr. Heane has been refused any award for this invention, and has even been refused his out-of-pocket expenses in connection therewith, that his claim in respect of an award has been tried in secret, and that he has been refused an open hearing, will he order a public enquiry to be made into the matter?

Mr. Young: The answer to the first part of the question is in the affirmative. During the year 1917 Mr. Heane was in communication with the Air Board concerning a form of synchronising gear invented by him. It is not the fact that his invention has been adopted or used by the Air Ministry; the Scarff-Dibowski gear, which, with improvements suggested by others, has been used, and which appears to have most resemblance to that submitted by Mr. Heane, was submitted by Major Scarff to the Admiralty in November, 1915, and was actually tried on January 19, 1916. Mr. Heane has been heard in person by Mr. Justice Sargant and the Secretary of the Royal Commission, to whom the original dated plans and suggestions for the Scarff-Dibowski gear were produced in Mr. Heane's presence; they were satisfied that his application had no reasonable chance of success if heard by the Royal Commission as a body. I am not prepared to order a public enquiry to be made.

Indian Air Mail Service

SIR H. BRITAIN asked the Under-Secretary of State for India to what extent aeroplanes are now being made use of for the purpose of carrying mails; and what encouragement, if any, is being given by the Indian Government for the development of this service?

Earl Winterton: Mails are, I believe, not yet being carried by aeroplane in India. The Government of India have decided to prepare an air route from Bombay to Calcutta and Rangoon, and, when the route or a section of it is completed, to invite tenders for an air mail service over the completed section or sections. In view of the present financial situation the preparation of the route is, I fear, likely to be delayed.

Royal Air Force in India

SIR H. BRITAIN asked the Under-Secretary of State for India whether he is satisfied that the Royal Air Force, which is in India, is sufficiently supplied with planes and spare parts necessary for the adequate carrying out of the service?

Earl Winterton: I am satisfied that the present provision of funds by the Government of India is sufficient to maintain the full establishment of reserves and spare parts which are necessary to enable the Royal Air Force in India adequately to carry out their service.

Aeroplanes and Parachutes

SIR W. JOYNSON-HICKS asked the Secretary of State for Air whether there are any fighting aeroplanes fitted with a parachute; whether flying officers have received any orders in reference to the use of parachutes; and whether he can make a statement as to the position which has been arrived at in regard to the use of parachutes and their reliability in the prevention of accidents?

Captain Guest: With reference to the first part of the question there are no fighting aeroplanes at present fitted with parachutes. As regards the second part of the question, a number of training aeroplanes are so fitted and instruction in the use of parachutes is being given, but at present no live drops for practice or experimental purposes are to be made from heavier-than-air craft. In reply to the third part of the question, the position in regard to parachutes is as follows: About 140 parachute sets have been issued for the equipment of Avro aeroplanes, which is the type employed for flying training purposes. These sets are being used for service trials, and reports are now being received making suggestions and recommendations regarding modifications and improvements found necessary. It is the intention to bring parachutes into general use as soon as they have reached a stage of development which warrants action involving some considerable expenditure.

SIR W. JOYNSON-HICKS: Is there any truth in the rumour—it cannot be more than that—that the Research Department on Parachutes has been very largely depleted in the last month, and that officers have been leaving?

Captain Guest: I hope not. I will make enquiries.

Navy, Army and Air Force Common Services

MR. MALONE asked the Prime Minister what are the terms of reference of the Committee, presided over by the Minister of Health, which is considering the question of amalgamating certain common services, such as the medical, accountant, audit, and chaplain branches of the three fighting Services; what is the constitution of the Committee; and is the Committee in a position to recommend the creation of a Ministry of Defence should it appear to them to be desirable?

MR. CHAMBERLAIN: The terms of reference of the Committee are as follows: That a technical Committee should be set up at once to make definite proposals for the amalgamation, or, if this appeared impossible or undesirable, for the co-ordination, so far as possible, of the common services of the Navy, Army and Air Force, such as intelligence, supply, transport, education, medical, chaplains, and any other overlapping Departments, in order to reduce the cost of the present triplication. The Committee should consider each branch separately, and submit interim reports to the Cabinet as soon as possible.

The Committee consists of:—

The Minister of Health (Chairman).

The Right Hon. the Lord Weir.

The hon. Member for Moray and Nairn.

The hon. and gallant Member for Howdenshire.

Sir G. L. Barstow.

Sir Arthur I. Durrant.

Major-General Sir F. A. M. Nash.

As I stated in reply to questions on Monday last, a separate Committee will investigate the practicability of a Ministry of Defence.

MR. MALONE: In view of the fact that the question of the establishment of a Ministry of Defence and the amalgamation of the services mentioned are so closely connected, would it not be best to have the same Committee to make the same investigation?

MR. CHAMBERLAIN: If the Government thought so they would have appointed one Committee to enquire into both questions. The Government take a

different view. Of course, it is not a matter that can be settled by question and answer.

Royal Aircraft Establishment

MR. RAPER, on May 18, asked the Secretary of State for Air what is the total personnel of the Royal Aircraft Establishment; and what are the numbers, respectively, of technical staff, clerical staff, skilled mechanics, and unskilled labourers?

Captain Guest: The total personnel is 1,316, of whom 270 represent scientific and technical staff (including Royal Air Force officers), 85 clerical staff, 626 skilled mechanics (including apprentices), and 335 labourers and general workers.

Imperial Airship Service

MR. RAPER asked the Secretary of State for Air whether his attention has been drawn to the letter issued by the Agent-General for Tasmania regarding Commander Burney's proposal for establishing an Imperial airship service; whether His Majesty's Government have come to any definite decision regarding this proposal; and whether, in the event of this or any similar scheme being adopted, it will be stipulated that the Air Ministry shall maintain adequate technical control?

MR. L. MALONE asked what action His Majesty's Government intend to take regarding the proposal put forward by Messrs. Vickers, Ltd., and the Shell Co., to develop airship communications?

Captain Guest: I am familiar with the letter referred to by my hon. friend, and have been in close communication with the Agent-General of Tasmania in regard to Commander Burney's proposal for establishing an Imperial Airship Service. Although I am unable at this stage to make any statement regarding the financial aspect of the scheme, Commander Burney has been informed that, in the opinion of the Air Council, his scheme constitutes a notable advance on previous proposals of this kind, and that if certain additional safeguards are provided, it offers reasonable prospect of satisfactory operation between India and this country. This statement is subject to the definite qualification that the commercial success of an undertaking depending upon the regular use of airships as a means of transport must, at present, be highly speculative. In the event of this or any other similar scheme being adopted, the question of adequate technical control by the Air Ministry will receive full consideration.

German and Russian Air Services

MR. MALONE asked the Secretary of State for Air what information he had concerning the German Berlin-Moscow air service; and whether any proposals are under consideration for a Berlin-London air service either by Britain or Germany?

Captain Guest: With reference to the first question, it is understood that as a result of negotiations carried out between the Soviet Government and a German company known as the Aero-Union Aktien-Gesellschaft, the operation of an air mail service between Königsberg and Moscow was begun on May 1 last by a subsidiary company founded by the German company mentioned above, and entitled the "Deutsch-Russische Luftverkehrs-Gesellschaft." According to a German air route time-table, there are two flights a week in each direction, and the aeroplanes connect at Königsberg with express trains to and from Berlin. The saving of time by the use of the air mail on a letter sent from Berlin to Moscow, or vice versa, is stated to be four days. It is believed that the aircraft employed are of Fokker type (with Rolls-Royce engines) which have been obtained from Holland and are owned by the Soviet Government. With reference to the second question, so far as is known, there are no serious proposals under consideration in Great Britain or Germany for a direct London-Berlin air service.

Civil Aviation Department Resignations

MR. MALONE asked the Secretary of State for Air whether the Deputy-Controllers of Information and Planning in the Department of the Controller-General of Civil Aviation have tendered their resignations, and, if so, why?

Captain Guest: The answer to the question is in the affirmative, but as these gentlemen have given no reasons I am unable to inform the hon. member of the cause of their resignations.

Wireless Apparatus on Passenger Aeroplanes

SIR H. BRITAIN, on May 22, asked the President of the Board of Trade what proportion of passenger-carrying aeroplanes trading between the Continent and Great Britain are fitted with wireless; and whether, for the greater safety of travellers, he is prepared to consider enforcing regulations in this regard with respect to every plane which carries passengers to and from this country?

The Secretary of State for Air (Captain Guest): This question should have been addressed to me. An agreement, which is being drawn up with the British aircraft companies operating on the recognised air routes between England and abroad under the Subsidy Scheme, will include a clause providing that all approved fleets of aircraft shall be equipped with wireless. The agreement containing this clause has not yet been signed, but at present all the large aircraft, 15 in number, trading regularly between London and Paris and London and Brussels, are fitted with wireless and communicate regularly with the Air Ministry ground stations. Two small aircraft, with accommodation for only two passengers each, are not fitted. As regards foreign machines on the London-Continental route, one French machine is at present fitted with wireless, and the French companies have agreed that all their large passenger-carrying aircraft on this service shall be similarly equipped by the middle of August. The Dutch are also arranging to equip with wireless their aircraft on the Holland-England route.

SIR H. BRITAIN: May we take it that before the end of the year all machines, British or foreign, travelling between this country and other countries, will be equipped with wireless?

Captain Guest: Yes. I hope they will be so equipped long before the end of the flying season.

R.A.F. Travelling Facilities

CAPTAIN W. BENN asked the Secretary of State for Air whether travelling concessions for officers and men have been abolished?

Captain Guest: The cheap travelling facilities which up to that date had been granted at the expense of public funds to personnel of the Royal Air Force were, in common with those granted to the other Services, discontinued as from April 1 last. This decision, which was in accordance with the recommendations of the Geddes Committee, was taken after unsuccessful efforts had been made by the Departments concerned to induce the railway companies to reconsider their unfavourable attitude towards restoring the concessions granted by them before the War.

Insects Destroyed from the Air

EXTREMELY important experiments have been carried out at Troy, Ohio, in which the services of the aeroplane were made use of, in helping to combat destructive plagues of insects. A grove of catalpa trees planted in the Palace Yard at Troy, was threatened with "rapid consumption"

by caterpillars, and so an aeroplane, with a supply of arsenate of lead powder, flew low over the grove, spraying the latter with the powder, for a minute or less. Three days later, about 99 per cent. of the caterpillars were found dead on the ground.

We must try that on our roses!

NOTICES TO AIRMEN

Cross-Channel Air Routes : Position Finding Routine

CROYDON and Pulham D.F. stations, working in conjunction, will now keep a regular watch during the hours when flying is taking place on the Continental air routes for the purpose of providing pilots with information as to the position of their aircraft. The establishment of this system has been decided upon as the result of a series of tests carried out during the winter months.

Pilots and Navigators are strongly urged to make a practice of utilising on every flight this important aid to navigation, which has proved to be capable of determining the position of aircraft with a high degree of accuracy under normal conditions. The experience gained in the use of position finding in good weather, when pilots should be able to check the accuracy of the positions given by wireless, will add to their confidence and proficiency in using the system when flying in bad weather.

Details of the stations are given in the Notice, together with the Procedure.

(No. 50 of 1922.)

NOTICE TO GROUND ENGINEERS

Re-balancing of Propellers after Re-tipping or Repainting

1. GROUND engineers are reminded that when propellers are re-tipped or even re-painted, it is essential that they be properly re-balanced before being replaced on aircraft.

2. Such re-balancing can easily be carried out by fitting a metal or hardwood plug into the boss of the propeller, such plug carrying a 1-in. diameter steel spindle, which is, in turn, supported by two steel knife edges. The propeller should be balanced while under test by the application of additional paint or varnish as may be necessary.

(No. 6 of 1922.)

CORRESPONDENCE

The Editor does not hold himself responsible for opinions expressed by correspondents. The names and addresses of the writers, not necessarily for publication, must in all cases accompany letters intended for insertion in these columns.

CANADA A PROMISING LAND FOR AVIATION

[2057] I have read with great interest and appreciation your various articles showing the aerial activities in Canada. I hope you will continue these.

Last October I went to Canada to see for myself the things I had been told about.

I came back fired with enthusiasm, and thoroughly decided that Canada had a huge future before it in aviation.

I have been dinning it into the ears of all I meet—and especially "the trade"—that there lies the immediate development. There is a "job of work" to be done—and now. The survey, for instance, is a vast work, and it has got to be done.

The aviation business in Canada simply doesn't exist. But now the demand is coming. They are about to require new aircraft, not war junk, gift steeds and "primitives."

So far I hear of little being done by British constructors to appropriate this market. It is a pity. I wonder if they

really realise that one side of the St. Lawrence River is American? Canada is already far too tinged with the colours of America to please a visiting Britisher. Will the S.B.A.C., or whoever are the responsible people, complete the reproach by presenting Canadian aviation to America?

Canada will only buy internally, unless it is quite unavoidable to do otherwise. Who is going to set up those internal aircraft works? It can be done and done easily, and Canada is ready.

Why struggle along on civil experiments in the worst flying country in the world, when one of the best is only just across the pond?

I commend to your notice Canada. The aviation country of the immediate future.

It is perhaps proper to conclude with the remark that I am not a Canadian, so that any charge of patriotic bias falls to the ground. I have but seen for myself.

"D.C.M.H."

Air Mail Progress

THE Postmaster-General announces that from May 23 a third air mail to Paris (special fee 2d. per oz.) was started, to be closed at the General Post Office counter at 12.30 p.m. On the same date a second air mail commenced to Rotterdam and Amsterdam (special fee 3d. per oz.), which is also closed at the General Post Office at 12.30 p.m. Letters posted in London in the morning for transmission by the new dispatches should be delivered in Paris, Rotterdam and Amsterdam the same evening, even without payment of an express fee, and at places near Paris and throughout Holland by first post next morning. Letters sent by the third Paris despatch should, like those sent by the second Paris despatch—for which the latest time of posting at the General Post Office counter is 11.10 a.m.—connect with the night mail trains from Paris, and so save up to 24 hours in time of transmission to Switzerland, Italy, Austria, Jugo-Slavia, Bulgaria, Salonika and Turkey. Arrangements have been made to allow of late posting for the new dispatches at certain Post Office counters in Central London up till the times shown below:—G.P.O., 12.30 p.m.; Threadneedle Street, 12.15 p.m.; Lombard Street, 12.15 p.m.; Parliament Street, 12.5 p.m.; Charing Cross, 12.10 p.m.; West Central District Office, 12.15 p.m.; Western District Office, 11.50 a.m.; South-Western District Office, noon. Registered letters must be handed in five minutes earlier in each case.

London-Paris and Brussels Air Mail

THE Postmaster-General announces that the first Air Mail from London to Paris is now forwarded by aeroplane due to leave Croydon aerodrome at 8.30 a.m., and that a morning Air Mail from London to Brussels is now dispatched regularly.

The use of these dispatches offers particular advantages for letters posted in the provinces (the south-east of England excepted) during the latter part of the business day, i.e. too late for inclusion in the mails due to be forwarded to the Continent by boat the same night, but in time for the general night mail dispatches to London. By the use of the early Air Mail to Paris (special fee 2d. per oz.), such letters will normally be delivered in Paris on the morning after posting, if express, and on the afternoon after posting, if non-express, instead of by the last post in the evening. Further, delivery in places near Paris should be secured in

the evening, instead of on the second morning after posting. Letters forwarded to Brussels (special fee 2d. per oz.) should be delivered the next afternoon after posting, even without payment of an express fee, instead of on the second morning, and delivery should be secured in most other parts of Belgium by the next evening after posting.

Letters posted in London between the night mail and midnight collections, and also, in the case of the Brussels service, letters handed in at the General Post Office counter up till 8.15 a.m., will normally be benefited to the same extent. The latest time of posting for the Air Mails in any locality can be ascertained from the local Head Post Office.

Rumania Opens Out in Aviation

THE importance of aviation from a national defence point of view is now, according to an *Observer* correspondent, appreciated by the Rumanian Government, and accordingly during the present month considerable development has taken place in the military air service. Sixty modern machines, mostly of the D.H. 9 type, have been purchased from a British firm, and delivery has already been taken of most of these, which are being distributed among the flying schools of the country. A British demonstration pilot brought over the first machine a few weeks ago, and astonished the King and the military chiefs by his feats.

Since that date, a batch of ten aeroplanes of the Brandenburg type has been manufactured by the National Aircraft Factory, near Bucarest; these are the first native machines in Rumania, and their final tests, the correspondent states, have been entirely satisfactory. The cost price of these machines has been reduced to 285,000 lei with a 220 h.p. engine. The King was present at the baptism ceremony of this first batch of Rumanian aeroplanes, and the Metropolitan of Bucarest himself performed the necessary rites.

In the matter of civil aviation, July is to see the inauguration of the long-postponed Paris-Bucarest passenger air service. For the wedding of Princess Marie and King Alexander of Jugo-Slavia, a special advance service is to be run in connection with this line from Budapest to Belgrade. An airport, which, it is hoped, may become one of the most important in Europe, is in course of construction on the plateau of Boneasa, 2 km. from the best residential quarter of Bucarest.

THE ROYAL AIR FORCE

London Gazette, May 16, 1922

General Duties Branch

Flying Offr. J. M. Glaisher, D.F.C., is granted a permanent commn., retaining his present substantive rank and seniority; October 24, 1919 (*Gazette* October 24, 1919, appointing him to a short service commn., is cancelled). H. J. Hunter is granted a short service commn. as a Flying Offr., with effect from, and with seniority of May 4. The following are granted short service commns. as Pilot Offrs. on probation, with effect from, and with seniority of, May 1:—G. W. Dean, J. V. Holman, B. V. Reynolds, T. A. Verney-Cave.

Lieut. J. N. Jaques, R.W. Kent Regt., is granted a temp. commn. as a Flying Offr., with effect from, and with seniority of May 3, for four years.

duty with the R.A.F. The following Pilot Offrs. on probation are confirmed in rank; May 1:—J. J. Comerford, S. S. Kirstem.

Medical Service

J. M. A. Costello, M.C., M.B., is granted a short service commn. as a Flight-Lieut., with effect from, and with seniority of, May 1. J. H. Wood, M.B., D.P.H., is granted a temp. commn. as a Flight-Lieut., with effect from, and with seniority of, May 1. The following Flight-Lieuts. relinquish their temp. commns. on ceasing to be employed, and are permitted to retain the rank of Capt.; April 8:—E. R. Bastard, W. F. Sheil, M.B.

Memoranda

Lieut. F. W. Garley relinquishes his temp. commn. on ceasing to be employed, and is permitted to retain his rank; May 9.

Independent Force (R.A.F.) Re-union

THE Fourth Annual Re-union Dinner of the Independent Force, including all officers of army troops and other attached units, will be held at the Hotel Cecil, on Monday, June 19, 1922, at 7.45 p.m. for 8 p.m. Air Chief Marshal Sir H. M. Trenchard, Bart., K.C.B., D.S.O., A.D.C., will be in the Chair, and Group-Capt. H.R.H. The Duke of York, K.G., G.C.V.O., has signified his intention of being present. It is desired that this notice should be brought to the attention of any eligible officers who may not have received a circular. Tickets are priced at 15s. (excluding wines), and may be obtained from the Hon. Secretary, I.F. Dinner Club, Room 337E, Alexandra House, Kingsway, W.C. 2, to whom any alteration in address should be sent. Evening dress (with miniatures) will be worn.

Aircraft and the Russo-German Treaty

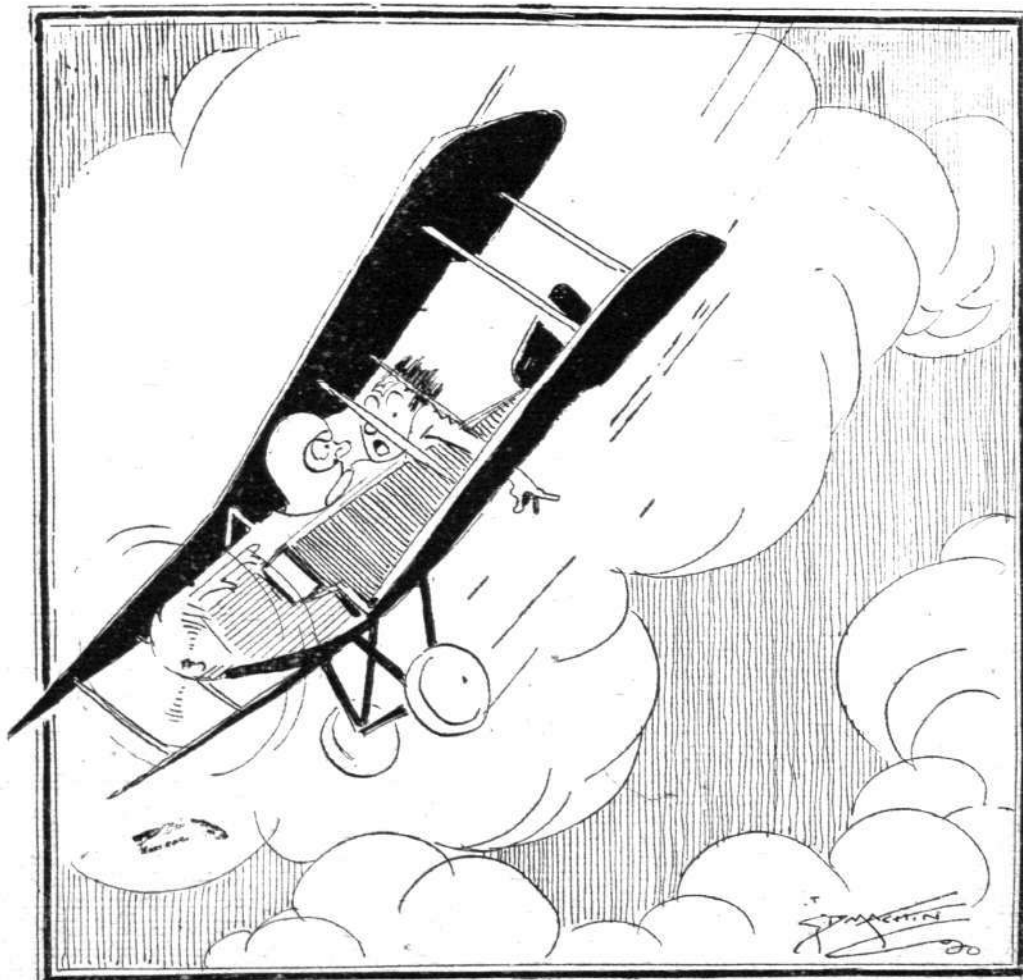
ASSUMING that the text of the Russo-German Secret Treaty, published in the *Daily Mail* last week, is correct, aircraft very naturally occupies a highly important place in the arrangements of these two would-be violators of the world's future peace. In connection with the clauses relating

to the Russian Fleet reorganisation, one undertaking by Germany is that: "In addition to those already supplied, the German General Staff undertakes to deliver as soon as possible 500 more new aeroplanes of the Junker type, with a corresponding number of spare parts."

In regard to building new aircraft, the following clause is suggestive: "The General Staff of the Red Army guarantees to the German General Staff that the three German factories selected by the latter—that is to say, one for aeroplanes and aeroplane engines, one for asphyxiating gas and one for arms—can be equipped and started in Russia on condition that the Red Army is given full power to utilise the output of these factories. Furthermore, the General Staff of the Red Army will place no obstacles in the way of the German officers and experts in their duties at the new arms factory installed in Afghanistan."

With our nice tabloid little set of 12 air squadrons, the promise of the above developments from one quarter of this side of the world should be very comforting to our Government, and those who have the future welfare of our Empire at heart.

Silly questions we have been asked:



I!—"Oh, I say! I dropped my hat in that last loop. It fell in Hounslow somewhere. Do you mind planing down for it?"

Parcels for Brussels by Air Mail

THE Postmaster-General announces that arrangements have been made with Messrs. Instone Air Line, Ltd., whereby parcels may be posted at certain Post Offices for conveyance by air and delivery in Brussels by that Company at the same rates and under the same general conditions as for Paris. The scale of charges is as follows:—For parcels weighing up to 2 lb., 1s. 9d.; 3-5 lb., 3s.; 5-8 lb., 3s. 9d.; 8-11 lb., 4s. 3d.

Parcels are normally dispatched by aeroplane on the morning following the day of posting but at certain London offices parcels may be posted in the morning in time for dispatch the same day. The parcels are cleared through the Belgian Customs immediately after arrival at Haren (Brussels) by the air transport company, and are normally delivered to the addressees on the day of arrival. The saving in time of transmission afforded by the use of the air service and by the rapid clearance of parcels through the Belgian Customs is considerable. A small fee for delivery, as well as a fee for Customs clearance will be levied by the company.

Further details of the conditions of the service may be obtained on application at any accepting Post Office. The names of the accepting offices and the latest times of posting in the chief provincial towns, where the acceptance of parcels for conveyance by air is authorised, may be ascertained from the local Head Post Office.

Air Education for the Young Generation

MR. W. J. HASLAM, writing from New College, Harrogate, says if, as seems likely, the air is to play as important a part in the future as the sea has done in our past history, it is essential that the boys of today should become familiar with it. At present they do not realise how enormously air transport has developed since the War. "With this object in view, I arranged on our recent Continental trip that the whole party (twenty) should return from Paris by air, and the arrangements for our comfort were so admirable that I have every confidence in passing on the suggestion to others."

The French Grand Prix (Balloons)

ALTHOUGH at the time of writing the official announcement of the winners in the French Grand Prix has not been made, it appears probable that, as regards distance, the competitors will be placed as follows:—1. Blanchet on Fernande, distance 409 km.; 2. Ferrero on Aero 1, distance 407 km.; 3. Cormier on Anjou, distance 406 km.; 4. Kapferer on Ville-de-Paris, distance 405 km.; 5. Dollfus on Globevolant, distance, 403 km.; and Demuyter on Belgica, 305 km. It will be seen that the distances covered are so nearly identical that a re-arrangement may be found in the official results. The duration record of the 1922 competition would appear to have gone to the Belgian Demuyter, whose time in the air is stated to have been 23 hours. If Blanchet is declared the winner of the distance, it will be the fourth time, he having won the Grand Prix in 1908, 1909 and 1910.

The Air Conference at Brussels

AT the Air Conference which is being held at Brussels between representatives of Great Britain, France and Belgium, it is understood that, among other important items, the question of "rules of the road," on the London-Paris route was discussed and a series of rules laid down. So far as can be ascertained, these rules follow, in the main, those already agreed to by the conference of pilots at Croydon, shortly after the lamentable collision at Thieuloy. It is believed that the carrying of wireless telephones of British type is to be made compulsory. During the conference, it is stated, Sir Sefton Brancker indicated that Great Britain will ratify the International Air Convention during the course of the next month or so, and in that case, the International Air Navigation Commission should be constituted sometime during the latter part of July.

PUBLICATIONS RECEIVED

Vom Fliegen. Verlag R. Oldenbourg. Gluckstrasse 8, Munich. Price 150 Marks.

Printing. Supplement to the "Manchester Guardian." The Cloister Press, 3, Cross Street, Manchester.

Technical Note No. 97. N.A.C.A. Control Position Recorder. By F. H. Norton. National Advisory Committee for Aeronautics, Navy Building, Washington, D.C., U.S.A.

Rendiconti dell' Istituto Sperimentale Aeronautico. Series 2a, Nos. 1 and 2. February and April, 1922. "Rendiconti" Libreria di Scienze e Lettere, Piazza Madama 19-20, Rome.

Report No. 140. Lift and Drag Effects of Wing-Tip Rake. National Advisory Committee for Aeronautics, Navy Building, Washington, D.C., U.S.A.

Report No. 142. General Theory of Thin Wing Sections. National Advisory Committee for Aeronautics, Navy Building, Washington, D.C., U.S.A.

THE LONDON AERO-MODELS ASSOCIATION

AT the weekly meeting held at Headquarters on Thursday, the 18th inst., Mr. A. Wilson in the Chair, it was announced that Dr. A. P. Thurston, D.Sc. (Lond.), F.R.Ae.S., M.I.A.E., A.M.I.M.E., had accepted the presidency of the Association. Dr. Thurston has promised to edit all lectures to be read before the Association.

An excellent concert was given by Mr. J. Louch and his artistes on Saturday last at Headquarters, and greatly appreciated; a hearty vote of thanks being passed to all taking part, and also to Mr. and Mrs. Rees for the accommodation provided, and to Mr. and Mrs. Graves for the excellent arrangements made.

On Sunday a special demonstration was held on Parliament Hill Fields, there being approximately 40 models flying. It is impossible to refer to any individual machine, all members working with a will to make the meeting a success.

At Headquarters on Thursday next, the 25th inst., a discussion will be opened on "The Construction of Built-up Fuselages."

An Aerial Golf Competition will be held on Hackney Marshes on Saturday, June 3, at 4.30 p.m., as announced last week, with exception that it is to be an open competition. Non-members' entrance fee, 1s. All names to be sent to Mr. C. A. Rippon (Competition Secretary), 52, Fairbridge Road, Holloway, N. 19.

Report from Research Committee.

The propeller-testing apparatus was set in motion, and worked quite satisfactorily. A few propellers of various diameters were tried, and it was noted that they affected the speed of the motor very considerably. The calibrated scale was tested by means of a pulley and weights, and was found to give accurate readings.

The motor will be made reversible before further tests are carried out, so that right-hand and left-hand propellers can be tested under similar conditions. In the absence of a revolution counter no records of propeller tests could be made. Hon. Sec. (pro tem.) for Research Committee, W. E. Evans.

Meetings are held at Headquarters, 20, Great Windmill Street, Piccadilly Circus, W. 1, every Thursday evening at 7.30 p.m. Intending members cordially invited. Particulars of the Association may be obtained from A. E. Jones, Hon. Sec., 48, Narcissus Road, West Hampstead, N.W. 6.

AERONAUTICAL PATENT SPECIFICATIONS

Abbreviations: cyl. = cylinder; I.C. = internal combustion; m. = motors. The numbers in brackets are those under which the Specifications will be printed and abridged, etc.

APPLIED FOR IN 1920

Published May 25, 1922

36,241. M. PARDO Y COSIO. Means for control of aircraft. (155,844.)

APPLIED FOR IN 1921

Published May 25, 1922

2,759. H. BOLAS and G. PARNALL. Aircraft. (178,912.)
3,921. M. PARDO Y COSIO. Means for control of aircraft. (159,139.)
4,104. SOC. DES AEROPLANES H. and M. FARMAN. Brakes. (159,141.)
5,854. MARQUIS OF PATERAS PESCARA. Helicopters. (159,212.)
12,144. K. A. ENLIND. Airships. (179,069.)

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